



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
NEW YORK DISTRICT, CORPS OF ENGINEERS  
JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, N.Y. 10278-0090

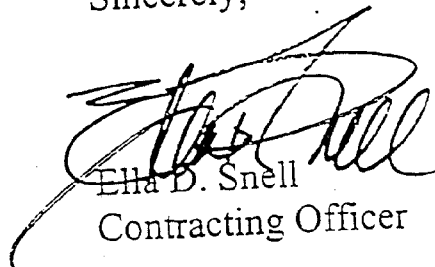
Contracts Branch  
Contracting Division

SUBJECT: Central Contractor Registration

TO ALL PROSPECTIVE CONTRACTORS:

Please be advised that it is now required to register with the CCR (Central Contractor Registration) in order to perform work for the Federal Government. For additional information, please refer to the instruction sheet on the back of this letter, which includes the appropriate websites and telephone numbers.

Sincerely,



Ella D. Snell  
Contracting Officer

# CENTRAL CONTRACTOR REGISTRATION

***HTTP://WWW.ACQ.OSD.MIL/EC***

**1(800) 334-3414**

The Central Contractor Registry (CCR) is the Government's new national storing house of commercial and financial information on current and would-be contractors.

CCR eliminates the requirement for current and future contractors to submit Standard Form 129 and provides a single location for registering to conduct business with the Federal Government. Access to the register is available via the World Wide Web. A registration workbook is available for downloading from this site. It is highly recommended you review it prior to processing CCR to ensure all required information is available. Contractors are required to have a DUNS (Data Universal Numbering System) assigned by Dunn & Bradstreet at no charge (call 1-800-333-0505).

The initial Web Site application capability is for the initial contractor registration only. The ability to change, update or cancel a registration and query contractor information via the Web is currently in effect. After submitting a registration, contractors may use the Web application to inquire as to the status of their registration. Typically, a registration will be activated within 48 hours after receiving a complete and accurate application via the Internet. To register via the Internet, go to <http://ccr.edi.disa.mil>. Registration of an applicant through fax or mail may take up to 30 days. The mailing addresses are as follows: For firms with Legal business names beginning with the letters A-K or a number use CCR Registration Assistance Center, 2000 South Loop 256, Suite 11, Palestine, Texas 75801, FAX NO: (903) 729-7988. For firms with Legal business names beginning with the letters L-Z or a number use CCR Registration Assistance Center, 1450 Scalp Avenue, Johnstown, PA. 15904 FAX NO: (814) 262-2326. For those Contractor's who chose to register by mail, a paper registration form can be used and sent or faxed to the appropriate above address who will also furnish the form. Once successfully registered in CCR, a notice will be sent via email, fax, or regular post with information that a Trading Partner Identification Number (TPIN) will soon follow. For CCR implementation and contract questions please contact Robert Cooper at (703) 681-7573.

Anyone may access CCR via the Web to inquire whether vendor is registered at the following site: <http://ccr.edi.disa.mil>.

Information or assistance is available from your local Electronic Commerce Resources Center or Electronic Commerce Information Center at 1-800-334-3414 (8am-8pm), Monday-Friday, except Federal Holidays.

Additionally, your local Procurement Technical Assistance Center (PTAC) employs highly skilled professionals to help businesses like ours earn Federal and State Government contracts; assist with your CCR enrollment. The PTAC can provide Government specifications, daily listings of bid opportunities, bid history and contract award results, training and assistance with Electronic Data Exchange (EDI).

To find the office nearest you, the national PTAC directory can be accessed at Website <http://www.fedmarket.com/tecassis.html>.



**US Army Corps  
of Engineers®**  
NEW YORK DISTRICT

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NORTHPORT HARBOR  
VILLAGE OF NORTHPORT, NEW YORK  
SECTION 14  
EMERGENCY SHORELINE PROTECTION PROJECT

# Specifications

**IFB NO. W912DS-04-B-0016 (UNRESTRICTED)**

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US ARMY ENGINEER DISTRICT  
CORPS OF ENGINEERS  
NEW YORK, NEW YORK

NORTHPORT HARBOR, VILLAGE OF NORTHPORT, NEW YORK  
SECTION 14  
EMERGENCY SHORELINE PROTECTION PROJECT

**INVITATION FOR BIDS**

1. Attached is INVITATION FOR BIDS (IFB) NO.W912DS-04-B-0016
2. BIDS MUST BE SET FORTH full, accurate, and complete as required by this INVITATION FOR BIDS, including attachments. The penalty for making false statements in bids is prescribed under Title 18, United States Code, Section 1001.
3. SUBMISSION OF BIDS: Complete details concerning proper submission of bids are contained in the INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS (Section 00100).
4. Note the REQUIREMENT FOR AFFIRMATIVE ACTION of the EQUAL OPPORTUNITY clause as it applies to the contract resulting from this solicitation. (See paragraph NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY in Section 00100 of this IFB).
5. REPRESENTATIONS AND CERTIFICATIONS – SECTION 00600 Bidders and Offerors are required to complete the REPRESENTATIONS AND CERTIFICATIONS and submit them with their bids.  
  
Within Section 00600, note in particular the PROHIBITION OF SEGREGATED FACILITIES. Failure of a bidder or offeror to agree to the certification will render his or her bid or offer non-responsive to the terms of solicitation involving awards of contracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause (1984 APR).
6. THIS IS A CIVIL WORKS PROGRAM PROCUREMENT AND IS NOT FUNDED BY THE DEPARTMENT OF DEFENSE. BUY AMERICAN ACT – CONSTRUCTION MATERIALS (MAY 1993) IN ACCORDANCE WITH FAR 52.225-9 and 52.225.10 APPLIES.
7. Please review all bonds and accompanying documents required to be submitted. Bonds, Powers of Attorney, statements of authenticity and continuing validity, and all related documents **MUST NOT** bear computer printer-generated signatures and/or seals. Documents bearing signatures and/or seals generated as part of a document, as opposed to being affixed to the document **after** its generation, will not be accepted. Submission of such documents may render the bid or offer non-responsive and ineligible for award.

US ARMY ENGINEER DISTRICT  
CORPS OF ENGINEERS  
NEW YORK, NEW YORK  
NORTHPORT HARBOR, VILLAGE OF NORTHPORT, NEW YORK  
SECTION 14  
EMERGENCY SHORELINE PROTECTION PROJECT  
**CHECKLIST FOR BIDDERS**

ATTACHED IS IFB NO. W912DS-04-B-0016

ALL INFORMATION REQUIRED BY THE TERMS OF THE SOLICITATION MUST BE FURNISHED. MISTAKES OR OMISSIONS MAY RENDER YOUR BID INELIGIBLE FOR AWARD. IMPORTANT ITEMS FOR YOU TO CHECK ARE INCLUDED BUT NOT LIMITED TO THOSE LISTED BELOW. THIS INFORMATION IS FURNISHED ONLY TO ASSIST YOU IN SUBMITTING A PROPER BID.

☐ HAVE YOU ACKNOWLEDGED ALL AMENDMENTS?

☐ HAVE YOU COMPLETED THE "REPRESENTATIONS AND CERTIFICATIONS" (SECTION 00600) PORTION OF THE SOLICITATION?

☐ IS YOUR DUNS NUMBER LISTED ON THE STANDARD 1422?

☐ IS YOUR BID PROPERLY SIGNED?

☐ HAVE YOU ENSURED THAT YOU HAVE NOT RESTRICTED YOUR OFFER BY ALTERING THE PROVISIONS OF THE SOLICITATION?

☐ IS YOUR BID GUARENTEE IN THE PROPER AMOUNT? IS IT PROPERLY SIGNED BY BOTH THE BIDDER AND SURETY AND ARE ALL REQUIRED SEALS AFFIXED?

☐ DO THE BID BOND AND ACCOMPANYING DOCUMENTS BEAR SIGNATURES AND SEALS AFFIXED **AFTER** THE DOCUMENT WAS GENERATED, AS OPPOSED TO COMPUTER PRINTER-GENERATED SIGNATURES AND/OR SEALS ?

☐ ARE DECIMALS IN YOUR PRICES IN THE PROPER PLACE? ARE YOUR FIGURES LEGIBLE?

☐ IF YOU HAVE MADE ERASURES OR CORRECTIONS ON YOUR BID, ARE THEY INITIALED BY THE PERSON SIGNING THE BID?

☐ DOES THE ENVELOPE CONTAINING YOUR BID PROPERLY IDENTIFY THAT IT IS A SEALED BID AND DOES IT CONTAIN THE CORRECT SOLICITATION NUMBER AND BID OPENING TIME?

[ ] WILL YOUR BID ARRIVE ON TIME? (SEE PARAGRAPH ENTITLED “LATE SUBMISSIONS, MODIFICATIONS, AND WITHDRAWALS OF BIDS” IN THE INSTRUCTIONS, CONDITIONS, AND NOTICES TO BIDDERS, SECTION 00100 OF THE SOLICITATION)

NOTE: THERE ARE INCREASED SECURITY MEASURES AT JACOB K. JAVITS FEDERAL BUILDING, 26 FEDERAL PLAZA THAT MAY AFFECT THE TIME IT TAKES TO ENTER THE BUILDING. BIDDER IS RESPONSIBLE TO ENSURE THAT ITS BID IS SUBMITTED TIMELY.

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<b>SOLICITATION, OFFER, AND AWARD</b> <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. W912DS-04-B-0016	2. TYPE OF SOLICITATION <input checked="checked" type="checkbox"/> SEALED BID (IFB) <input type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 10-Aug-2004	PAGE OF PAGES 1 OF 62
<b>IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.</b>				
4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W16ROE-4188-0385		6. PROJECT NO.	
7. ISSUED BY USA ENGINEER DISTRICT, NEW YORK ATTN: CENAN-CT ROOM 1843 26 FEDERAL PLAZA NEW YORK NY 10278  TEL: 212-264-0238      FAX: 212-264-3013		CODE W912DS	8. ADDRESS OFFER TO <i>(If Other Than Item 7) CODE</i> <div style="border: 1px solid black; padding: 10px; text-align: center; margin: 10px 0;"> <b>See Item 7</b> </div> TEL:      FAX:	
9. FOR INFORMATION CALL:	A. NAME MYRLANDE LEE		B. TELEPHONE NO. <i>(Include area code) (NO COLLECT CALLS)</i> 212-264-0242	
<b>SOLICITATION</b>				
<b>NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".</b>				
10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS <i>(Title, identifying no., date):</i>  NORTHPORT HARBOR, VILLAGE OF NORTHPORT, NEW YORK, EMERGENCY SHORELINE PROTECTION PROJECT  1. The project consists of construction of approximately 130 linear feet of vinyl sheetpile bulkhead with tieback anchors and associated toe armor along Woodbine Avenue and vicinity.  2. This project is UNRESTRICTED pursuant to the Small Business Competiveness Demonstration Program. NAICS Code: 237990, size standard \$28.5 million  3. This a continuing contract.  4. Please review all bonds and accompanying documents required to be submitted. Bonds, Powers of Attorney, statements of authenticity and continuing validity, and all related documents MUST NOT bear computer printer-generated signatures and/or seals. Documents bearing signatures and/or seals generated as part of a document, as opposed to being affixed to the document after its generation, will not be accepted. Submission of such documents may render the bid or offer non-responsive and ineligible for award.  Contract Specialist: Myrlande Lee 212-264-4863 Technical Point of Contact: Sheila Rice McDonnell 212-264-9068				
11. The Contractor shall begin performance within <u>  5  </u> calendar days and complete it within <u> 180 </u> calendar days after receiving <input type="checkbox"/> award, <input checked="checked" type="checkbox"/> notice to proceed. This performance period is <input checked="checked" type="checkbox"/> mandatory, <input type="checkbox"/> negotiable. <i>(See _____.)</i>				
12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? <i>(If "YES," indicate within how many calendar days after award in Item 12B.)</i> <input checked="checked" type="checkbox"/> YES <input type="checkbox"/> NO			12B. CALENDAR DAYS  10	
13. ADDITIONAL SOLICITATION REQUIREMENTS:  A. Sealed offers in original and <u>  1  </u> copies to perform the work required are due at the place specified in Item 8 by <u>11:00 AM</u> <i>(hour)</i> local time <u> 08 Sep 2004 </u> <i>(date)</i> . If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.  B. An offer guarantee <input checked="checked" type="checkbox"/> is, <input type="checkbox"/> is not required.  C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.  D. Offers providing less than <u> 120 </u> calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.				

**SOLICITATION, OFFER, AND AWARD (Continued)***(Construction, Alteration, or Repair)***OFFER (Must be fully completed by offeror)**

14. NAME AND ADDRESS OF OFFEROR <i>(Include ZIP Code)</i>		15. TELEPHONE NO. <i>(Include area code)</i>
		16. REMITTANCE ADDRESS <i>(Include only if different than Item 14)</i>  <b>See Item 14</b>
CODE	FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within \_\_\_\_\_ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES
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18. The offeror agrees to furnish any required performance and payment bonds.

**19. ACKNOWLEDGMENT OF AMENDMENTS***(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)*

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER <i>(Type or print)</i>	20B. SIGNATURE	20C. OFFER DATE
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**AWARD (To be completed by Government)**

21. ITEMS ACCEPTED:
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22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA
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24. SUBMIT INVOICES TO ADDRESS SHOWN IN <i>(4 copies unless otherwise specified)</i>	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO <input type="checkbox"/> 10 U.S.C. 2304(c) <input type="checkbox"/> 41 U.S.C. 253(c)
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26. ADMINISTERED BY CODE	27. PAYMENT WILL BE MADE BY: CODE
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**CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE**

<input type="checkbox"/> 28. NEGOTIATED AGREEMENT <i>(Contractor is required to sign this document and return _____ copies to issuing office.)</i> Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.	<input type="checkbox"/> 29. AWARD <i>(Contractor is not required to sign this document.)</i> Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.
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30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN <i>(Type or print)</i>		31A. NAME OF CONTRACTING OFFICER <i>(Type or print)</i>	
30B. SIGNATURE	30C. DATE	TEL: EMAIL:	
		31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

## Section 00010 - Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	CONSTRUCTION Northport Harbor	1	Lump Sum		

All work for construction of the Emergency Shoreline Protection Project. The project includes bank stabilization measures to prevent the collapse of Woodbine Avenue. The project consists of construction of approximately 130 linear feet of vinyl sheetpile bulkhead with tieback anchors and associated toe armor along Woodbine Avenue and vicinity. It includes regrading and stabilization of the embankment upslope of the bulkhead wall with select earthfill and a geo-grid slope protection system, and planting of vegetative cover. Construction requires clearing and grubbing the site, including demolition of existing wooden deck, site preparation and other ancillary work.

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NET AMT

## Section 00100 - Bidding Schedule/Instructions to Bidders

## CLAUSES INCORPORATED BY REFERENCE

52.214-3	Amendments To Invitations For Bids	DEC 1989
52.214-4	False Statements In Bids	APR 1984
52.214-5	Submission Of Bids	MAR 1997
52.214-6	Explanation To Prospective Bidders	APR 1984
52.214-7	Late Submissions, Modifications, and Withdrawals of Bids	NOV 1999
52.214-12	Preparation Of Bids	APR 1984
52.214-18	Preparation of Bids-Construction	APR 1984
52.214-19	Contract Award-Sealed Bidding-Construction	AUG 1996
52.214-21	Descriptive Literature	APR 2002
52.214-34	Submission Of Offers In The English Language	APR 1991
52.214-35	Submission Of Offers In U.S. Currency	APR 1991
52.232-15	Progress Payments Not Included	APR 1984
52.232-16	Progress Payments	APR 2003
52.232-38	Submission of Electronic Funds Transfer Information with Offer	MAY 1999

## CLAUSES INCORPORATED BY FULL TEXT

## 52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
<b>5.8%</b>	<b>6.9%</b>

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

- (1) Name, address, and telephone number of the subcontractor;
- (2) Employer's identification number of the subcontractor;
- (3) Estimated dollar amount of the subcontract;
- (4) Estimated starting and completion dates of the subcontract; and
- (5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is **Village of Northport, New York**

(End of provision)

#### 52.232-2 PAYMENTS UNDER FIXED-PRICE RESEARCH AND DEVELOPMENT CONTRACTS (APR 1984)

The Government shall pay the Contractor, upon submission of proper invoices or vouchers, the prices stipulated in this contract for work delivered or rendered and accepted, less any deductions provided in this contract. Unless otherwise specified, payment shall be made upon acceptance of any portion of the work delivered or rendered for which a price is separately stated in the contract.

(End of clause)

## 52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

<http://farsite.hill.af.mil/>

(End of provision)

## 52.252-3 ALTERATIONS IN SOLICITATION (APR 1984)

Portions of this solicitation are altered as follows:

## 52.252-5 AUTHORIZED DEVIATIONS IN PROVISIONS (APR 1984)

(a) The use in this solicitation of any Federal Acquisition Regulation (48 CFR Chapter 1) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the provision.

(b) The use in this solicitation of any Federal Acquisition Regulation (48 CFR Chapter 1) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of provision)

## Section 00600 - Representations &amp; Certifications

## CLAUSES INCORPORATED BY REFERENCE

52.203-11	Certification And Disclosure Regarding Payments To Influence Certain Federal Transactions	APR 1991
52.204-5	Women-Owned Business (Other Than Small Business)	MAY 1999
52.219-2	Equal Low Bids	OCT 1995
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-38	Compliance With Veterans' Employment Reporting Requirements	DEC 2001
252.209-7001	Disclosure of Ownership or Control by the Government of a Terrorist Country	MAR 1998
252.225-7031	Secondary Arab Boycott Of Israel	APR 2003

## CLAUSES INCORPORATED BY FULL TEXT

## 52.203-2 CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (APR 1985)

(a) The offeror certifies that --

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to --

(i) Those prices,

(ii) The intention to submit an offer, or

(iii) The methods of factors used to calculate the prices offered:

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory --

(1) Is the person in the offeror's organization responsible for determining the prices offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision \_\_\_\_\_ (insert full name of person(s) in the offeror's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the offeror's organization);

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision.

(c) If the offeror deletes or modifies subparagraph (a)(2) of this provision, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

(End of clause)

#### 52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

##### (a) Definitions.

“Common parent,” as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

“Taxpayer Identification Number (TIN),” as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

##### (d) Taxpayer Identification Number (TIN).

\_\_\_ TIN: \_\_\_\_\_

\_\_\_ TIN has been applied for.

\_\_\_ TIN is not required because:

\_\_\_ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

\_\_\_ Offeror is an agency or instrumentality of a foreign government;

\_\_\_ Offeror is an agency or instrumentality of the Federal Government.



(e) Type of organization.

☐ Sole proprietorship;

☐ Partnership;

☐ Corporate entity (not tax-exempt);

☐ Corporate entity (tax-exempt);

☐ Government entity (Federal, State, or local);

☐ Foreign government;

☐ International organization per 26 CFR 1.6049-4;

☐ Other \_\_\_\_\_

(f) Common parent.

☐ Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

☐ Name and TIN of common parent:

Name \_\_\_\_\_

TIN \_\_\_\_\_

(End of provision)

**52.209-5 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (DEC 2001)**

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that-

(i) The Offeror and/or any of its Principals -

(A) Are ( ) are not ( ) presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have ( ) have not ( ), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are ( ) are not ( ) presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in paragraph (a)(1)(i)(B) of this provision.

(ii) The Offeror has ( ) has not ( ), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

This Certification Concerns a Matter Within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

(End of provision)

## 52.219-1 SMALL BUSINESS PROGRAM REPRESENTATIONS (MAY 2004)

(a)(1) The North American Industry Classification System (NAICS) code for this acquisition is ( ) (insert NAICS code).

(2) The small business size standard is ( ) (insert size standard).

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it ( ) is, ( ) is not a small business concern.

(2) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, for general statistical purposes, that it ( ) is, ( ) is not a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a women-owned small business concern.

(4) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a veteran-owned small business concern.

(5) (Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (b)(4) of this provision.) The offeror represents as part of its offer that it ( ) is, ( ) is not a service-disabled veteran-owned small business concern.

(6) (Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.) The offeror represents, as part of its offer, that--

(i) It ( ) is, ( ) is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material change in ownership and control, principal office, or HUBZone employee percentage has occurred since it was certified by the Small Business Administration in accordance with 13 CFR part 126; and

(ii) It ( ) is, ( ) is not a joint venture that complies with the requirements of 13 CFR part 126, and the representation in paragraph (b)(6)(i) of this provision is accurate for the HUBZone small business concern or concerns that are participating in the joint venture. (The offeror shall enter the name or names of the HUBZone small business concern or concerns that are participating in the joint venture:\_\_\_\_\_.) Each HUBZone small business concern participating in the joint venture shall submit a separate signed copy of the HUBZone representation.

(c) Definitions. As used in this provision--

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

"Small business concern," means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern," means a small business concern --

(1) That is at least 51 percent owned by one or more women; in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice.

(1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, HUBZone small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall--

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under the authority of the Act.

(End of provision)

## 52.219-22 SMALL DISADVANTAGED BUSINESS STATUS (OCT 1999)

(a) General. This provision is used to assess an offeror's small disadvantaged business status for the purpose of obtaining a benefit on this solicitation. Status as a small business and status as a small disadvantaged business for general statistical purposes is covered by the provision at FAR 52.219-1, Small Business Program Representation.

(b) Representations.

(1) General. The offeror represents, as part of its offer, that it is a small business under the size standard applicable to this acquisition; and either--

\_\_\_ (i) It has received certification by the Small Business Administration as a small disadvantaged business concern consistent with 13 CFR 124, Subpart B; and

(A) No material change in disadvantaged ownership and control has occurred since its certification;

(B) Where the concern is owned by one or more disadvantaged individuals, the net worth of each individual upon whom the certification is based does not exceed \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(C) It is identified, on the date of this representation, as a certified small disadvantaged business concern in the database maintained by the Small Business Administration(PROONet); or

\_\_\_ (ii) It has submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted.

(2)\_\_\_ For Joint Ventures. The offeror represents, as part of its offer, that it is a joint venture that complies with the requirements at 13 CFR 124.1002(f) and that the representation in paragraph (b)(1) of this provision is accurate for the small disadvantaged business concern that is participating in the joint venture. [The offeror shall enter the name of the small disadvantaged business concern that is participating in the joint venture: \_\_\_\_\_.]

(c) Penalties and Remedies. Anyone who misrepresents any aspects of the disadvantaged status of a concern for the purposes of securing a contract or subcontract shall:

(1) Be punished by imposition of a fine, imprisonment, or both;

(2) Be subject to administrative remedies, including suspension and debarment; and

(3) Be ineligible for participation in programs conducted under the authority of the Small Business Act.

(End of provision)

## 52.222-22 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FEB 1999)

The offeror represents that --

(a) ☐ It has, ☐ has not participated in a previous contract or subcontract subject to the Equal Opportunity clause of this solicitation;

(b) ☐ It has, ☐ has not, filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

(End of provision)

## 52.223-13 CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (AUG 2003)

(a) Executive Order 13148, of April 21, 2000, Greening the Government through Leadership in Environmental Management, requires submission of this certification as a prerequisite for contract award.

(b) By signing this offer, the offeror certifies that--

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: (Check each block that is applicable.)

☐ (i) The facility does not manufacture, process, or otherwise use any toxic chemicals listed in 40 CFR 372.65;

☐ (ii) The facility does not have 10 or more full-time employees as specified in section 313.(b)(1)(A) of EPCRA 42 U.S.C. 11023(b)(1)(A);

☐ (iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

☐ (iv) The facility does not fall within the following Standard Industrial Classification (SIC) codes or their corresponding North American Industry Classification System sectors:

(A) Major group code 10 (except 1011, 1081, and 1094.

(B) Major group code 12 (except 1241).

(C) Major group codes 20 through 39.

(D) Industry code 4911, 4931, or 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce).

(E) Industry code 4953 (limited to facilities regulated under the Resource Conservation and Recovery Act, Subtitle C (42 U.S.C. 6921, et seq.), 5169, 5171, or 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis); or

( ) (v) The facility is not located within the United States or its outlying areas.

(End of clause)

#### 52.226-2 HISTORICALLY BLACK COLLEGE OR UNIVERSITY AND MINORITY INSTITUTION REPRESENTATION (MAY 2001)

(a) Definitions. As used in this provision--

Historically black college or university means an institution determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. For the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, the term also includes any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

Minority institution means an institution of higher education meeting the requirements of Section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1067k, including a Hispanic-serving institution of higher education, as defined in Section 316(b)(1) of the Act (20 U.S.C. 1101a)).

(b) Representation. The offeror represents that it--

( ) is ( ) is not a historically black college or university;

( ) is ( ) is not a minority institution.

(End of provision)

#### 252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

\_\_\_\_ (1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

\_\_\_\_ (2) Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR

Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)



## Section 00700 - Contract Clauses

## CLAUSES INCORPORATED BY REFERENCE

52.202-1 Alt I	Definitions (Jun 2004) --Alternate I	MAY 2001
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	JUN 2003
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	JUL 1995
52.214-26	Audit and Records--Sealed Bidding	OCT 1997
52.214-27	Price Reduction for Defective Cost or Pricing Data - Modifications - Sealed Bidding	OCT 1997
52.214-28	Subcontracting Cost Or Pricing Data--Modifications--Sealed Bidding	OCT 1997
52.214-29	Order Of Precedence--Sealed Bidding	JAN 1986
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-9 Alt I	Small Business Subcontracting Plan (Jan 2002) Alternate I	OCT 2001
52.219-14	Limitations On Subcontracting	DEC 1996
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.222-3	Convict Labor	JUN 2003
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation	SEP 2000
52.222-6	Davis Bacon Act	FEB 1995
52.222-7	Withholding of Funds	FEB 1988
52.222-8	Payrolls and Basic Records	FEB 1988
52.222-9	Apprentices and Trainees	FEB 1988
52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	FEB 1988
52.222-12	Contract Termination-Debarment	FEB 1988
52.222-13	Compliance with Davis -Bacon and Related Act Regulations.	FEB 1988
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	FEB 1988
52.222-26	Equal Opportunity	APR 2002
52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	DEC 2001
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	DEC 2001
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-9	Buy American Act--Construction Materials	JUN 2003
52.225-10	Notice of Buy American Act Requirement--Construction Materials	MAY 2002

52.226-1	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	JUN 2000
52.227-1	Authorization and Consent	JUL 1995
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.227-4	Patent Indemnity-Construction Contracts	APR 1984
52.228-7	Insurance--Liability To Third Persons	MAR 1996
52.228-11	Pledges Of Assets	FEB 1992
52.228-14	Irrevocable Letter of Credit	DEC 1999
52.228-15	Performance and Payment Bonds--Construction	JUL 2000
52.229-3	Federal, State And Local Taxes	APR 2003
52.232-5	Payments under Fixed-Price Construction Contracts	SEP 2002
52.232-23	Assignment Of Claims	JAN 1986
52.232-27	Prompt Payment for Construction Contracts	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-16	Quantity Surveys	APR 1984
52.236-17	Layout of Work	APR 1984
52.236-21	Specifications and Drawings for Construction	FEB 1997
52.236-26	Preconstruction Conference	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-1 Alt I	Changes--Fixed Price (Aug 1987) - Alternate I	APR 1984
52.243-5	Changes and Changed Conditions	APR 1984
52.244-6	Subcontracts for Commercial Items	MAY 2004
52.246-1	Contractor Inspection Requirements	APR 1984
52.246-12	Inspection of Construction	AUG 1996
52.247-34	F.O.B. Destination	NOV 1991
52.249-2	Termination For Convenience Of The Government (Fixed-Price)	MAY 2004
52.249-2 Alt I	Termination for Convenience of the Government (Fixed-Price) (May 2004) - Alternate I	SEP 1996
52.249-10	Default (Fixed-Price Construction)	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	MAR 1999
252.203-7002	Display Of DOD Hotline Poster	DEC 1991
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7004 Alt A	Required Central Contractor Registration Alternate A	NOV 2003
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7000	Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate Range Nuclear Forces (INF) Treaty	NOV 1995
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	MAR 1998
252.219-7003	Small, Small Disadvantaged and Women-Owned Small Business Subcontracting Plan (DOD Contracts)	APR 1996
252.225-7012	Preference For Certain Domestic Commodities	JUN 2004

252.225-7016	Restriction On Acquisition Of Ball and Roller Bearings	MAY 2004
252.232-7003	Electronic Submission of Payment Requests	JAN 2004
252.232-7004	DOD Progress Payment Rates	OCT 2001
252.236-7000	Modification Proposals -Price Breakdown	DEC 1991
252.236-7002	Obstruction of Navigable Waterways	DEC 1991
252.236-7008	Contract Prices-Bidding Schedules	DEC 1991
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.244-7000	Subcontracts for Commercial Items and Commercial Components (DoD Contracts)	MAR 2000
252.246-7000	Material Inspection And Receiving Report	MAR 2003
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

#### CLAUSES INCORPORATED BY FULL TEXT

##### 52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within **5** calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than **180 calendar days after the date the Contractor receives the notice to proceed for the Base Bid**. The time stated for completion shall include final cleanup of the premises.

(End of clause)

##### 52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of **\$360** for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(End of clause)

## 52.211-18 VARIATION IN ESTIMATED QUANTITY (APR 1984)

If the quantity of a unit-priced item in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 15 percent above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115 percent or below 85 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the Contractor may request, in writing, an extension of time, to be received by the Contracting Officer within 10 days from the beginning of the delay, or within such further period as may be granted by the Contracting Officer before the date of final settlement of the contract. Upon the receipt of a written request for an extension, the Contracting Officer shall ascertain the facts and make an adjustment for extending the completion date as, in the judgement of the Contracting Officer, is justified.

## 52.214-5000 APPARENT CLERICAL MISTAKES (MAR 1995)--EFARS

(a) For the purpose of initial evaluations of bids, the following will be utilized in the resolving arithmetic discrepancies found on the face of bidding schedule as submitted by the bidder:

- (1) Obviously misplaced decimal points will be corrected;
- (2) Discrepancy between unit price and extended price, the unit price will govern;
- (3) Apparent errors in extension of unit prices will be corrected;
- (4) Apparent errors in addition of lump-sum and extended prices will be corrected.

(b) For the purpose of bid evaluation, the government will proceed on the assumption that the bidder intends his bid to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.

(c) These correction procedures shall not be used to resolve any ambiguity concerning which bid is low.

(End of statement)

## 52.219-4 NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (JAN 1999)

(a) Definition. HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(b) Evaluation preference. (1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except-

(i) Offers from HUBZone small business concerns that have not waived the evaluation preference;

(ii) Otherwise successful offers from small business concerns;

(iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is exceeded (see 25.402 of the Federal Acquisition Regulation (FAR)); and

(iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government.

(2) The factor of 10 percent shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor.

(3) A concern that is both a HUBZone small business concern and a small disadvantaged business concern will receive the benefit of both the HUBZone small business price evaluation preference and the small disadvantaged business price evaluation adjustment (see FAR clause 52.219-23). Each applicable price evaluation preference or adjustment shall be calculated independently against an offeror's base offer.

These individual preference amounts shall be added together to arrive at the total evaluated price for that offer.

(c) Waiver of evaluation preference. A HUBZone small business concern may elect to waive the evaluation preference, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply if the offeror has waived the evaluation preference.

\_\_\_ Offeror elects to waive the evaluation preference.

(d) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for

(1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;

(2) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;

(3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be will be spent on the concern's employees or the employees of other HUBZone small business concerns; or

(4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.

(e) A HUBZone joint venture agrees that in the performance of the contract, the applicable percentage specified in paragraph (d) of this clause will be performed by the HUBZone small business participant or participants.

(f) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

(End of clause)

#### 52.228-1 BID GUARANTEE (SEP 1996)

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.-

(c) The amount of the bid guarantee shall be **20%** percent of the bid price or **\$3 Million**, whichever is less.-

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.-

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

(End of clause)

#### 52.236-1 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)

The Contractor shall perform on the site, and with its own organization, work equivalent to at least **20%** percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

(End of clause)

#### 52.236-3 SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK (APR 1984)

(a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to

(1) conditions bearing upon transportation, disposal, handling, and storage of materials;

(2) the availability of labor, water, electric power, and roads;

(3) uncertainties of weather, river stages, tides, or similar physical conditions at the site;

(4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Government, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the Government.

(b) The Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Nor does the Government assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

(End of clause)

## 52.236-4 PHYSICAL DATA (APR 1984)

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) The indications of physical conditions on the drawings and in the specifications are the result of site investigations by . . . . . [insert a description of investigational methods used, such as surveys, auger borings, core borings, test pits, probings, test tunnels].

(b) Weather conditions . . . . . (insert a summary of weather records and warnings).

(c) Transportation facilities . . . . . (insert a summary of transportation facilities providing access from the site, including information about their availability and limitations.

(d) . . . . . (insert other pertinent information).

(End of clause)

## 52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://farsite.hill.af.mil/>

(End of clause)

## 52.252-4 ALTERATIONS IN CONTRACT (APR 1984)

Portions of this contract are altered as follows:

Add the following sentence to paragraph “g” of basic contract clause, SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (1984 APR):

“Upon completing the work under this contract, the Contractor shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the equipment is completed and accepted.”

Alt.1 (APR 1984) (FAR 52.236-21)

(End of clause)

**52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)**

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

**252.236-7001 CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS (AUG 2000)**

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

- (1) Check all drawings furnished immediately upon receipt;
- (2) Compare all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies;
- (4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and
- (5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

- (1) Large-scale drawings shall govern small-scale drawings; and
- (2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

**See Section 00800 page 45**

(End of clause)



**SPECIAL REQUIREMENTS**

## SECTION 00800

## SPECIAL CONTRACT REQUIREMENTS

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## SECTION 00800

## SPECIAL CONTRACT REQUIREMENTS

**PART 1 GENERAL****1. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK**

a. The Contractor shall be required to (i) commence work under this contract within 5 calendar days after the date the Contractor receives the Notice to Proceed, (ii) prosecute the work diligently, and (iii) complete work in the ready for use, not later than 180 calendar days after the date the Contractor receives the notice to proceed for the Base Bid. The time stated for completion shall include final cleanup of the premises.

b. The project area is located on the bank of Northport Harbor, along Woodbine Avenue, between two residential structures, in the Village of Northport, NY.

c. The Contractor shall furnish all labor, materials, equipment and services (except those furnished by the Government) for the following work:

The project includes bank stabilization measures to prevent the collapse of Woodbine Avenue. The project consists of construction of approximately 130 linear feet of vinyl sheetpile bulkhead with tieback anchors and associated toe armor along Woodbine Avenue and vicinity. It includes regrading and stabilization of the embankment upslope of the bulkhead wall with select earthfill and a geo-grid slope protection system, and planting of vegetative cover. Construction requires clearing and grubbing the site, including demolition of existing wooden deck, site preparation and other ancillary work.

d. All work shall be in accordance with the drawings and specifications or instructions attached hereto and made a part thereof, or to be furnished hereafter by the Contracting Officer and subject in every detail to his supervision, direction, and instructions. (DoD FAR Supplement 52.236-7014)

e. Magnitude of Construction Project: The estimated value of the proposed work is between \$500,000 and \$1,000,000.

**2. LIQUIDATED DAMAGES - CONSTRUCTION (APR 1984)**

a. If the Contractor fails to complete the work within the time specified in the Contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$360 for each day of delay.

b. If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable

time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

c. If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted. (FAR 52.211-12)

d. At any time before the project is physically complete but is functionally complete to the satisfaction of the Government, the Government at its sole discretion may agree to accept transfer of the facility or project provided that the remaining work to be done ("punchlist") is completed no later than 30 days from the date of transfer. In this case the Contractor shall pay liquidated damages for punchlist items not completed in the daily amount of \$100 per day commencing after 30 days of project transfer or after date required for project completion (including all extensions), whichever occurs later. These liquidated damages apply to punchlist items only.

**3. EQUAL OPPORTUNITY PREAWARD CLEARANCE OF SUBCONTRACTS** (1984 APR) (FAR 52.222-28)

Notwithstanding the clause of this contract entitled "Subcontracts" the Contractor shall not enter into a first-tier subcontract for an estimated or actual amount of \$1 million or more without obtaining in writing from the Contracting Officer a clearance that the proposed subcontractor is in compliance with the equal opportunity requirements and therefore is eligible for award.

**4. CERTIFICATES OF COMPLIANCE**

Any Certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in 4 copies. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements. (ECI 7- 670.3)

**5. BID GUARANTEE**

See Bid Guarantee Clause of Section 00700, CONTRACT CLAUSES.

## 6. CONTRACT DRAWINGS, MAPS AND SPECIFICATIONS (52.236-7001)

See Contract Drawings, Maps and Specifications Clause of Section 00700, CONTRACT CLAUSES.

Contract drawings are as follows:

DRAWING NO.	TITLE
CCC-G001-01	INDEX
CCC-C402-02	GENERAL SITE LAYOUT & SITE ACCESS PLAN
CCC-C103-03	GENERAL PLAN AND SURVEY BASELINE DATA
CCC-C104-04	DETAIL PLAN AND ELEVATION OF WALL
CCC-C105-05	CLEARING & GRUBBING PLAN; GRADING & DRAINAGE PLAN
CCC-B306-06	SLOPE STABILIZATION CROSS SECTIONS, No 1
CCC-B307-07	SLOPE STABILIZATION CROSS SECTIONS, No 2
CCC-B308-08	SLOPE STABILIZATION CROSS SECTIONS, No 3
CCC-B309-09	SLOPE STABILIZATION CROSS SECTIONS, No 4
CCC-B510-10	SLOPE STABILIZATION DETAILS
CCC-S511-11	CONSTRUCTION DETAILS
CCC-S512-12	STRUCTURAL PLAN AND ELEVATION OF WALL
CCC-S513-13	WALL DETAILS AND SECTION AT NORTH AND SOUTH ENDS
CCC-S514-14	STRUCTURAL DETAILS OF WALL
CCC-C115-15	EROSION AND SEDIMENT CONTROL PLAN ( <b>NOT USED</b> )
CCC-C116-16	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
CCC-C117-17	MAINTENANCE AND PROTECTION OF TRAFFIC STAGING PLANS AND DETAILS
CCC-L118-18	PLANTING PLAN AND DETAILS
CCC-B319-19	SUBSURFACE EXPLORATION
CCC-V420-20	TOPOGRAPHIC SURVEY

## 7. RECORD DRAWINGS

a. General: The Contractor will maintain as-built drawings during the construction period and will submit final record drawings at the completion of individual facilities. The Government will provide to the Contractor the CAD (Computer-Aided Drafting) files consisting of compact (computer)

disks or magnetic media of the drawing files in the appropriate CAD format (i.e. "Microstation", "Autocad", etc.) for the project. The Contractor is required to make prints or mylars from the CAD files and continuously maintain drawings to show current as-built conditions for the duration of the construction. Except for updates as indicated below, the Contractor may maintain as-built drawings by marking up drawings by hand or by CAD methods. Scanned drawings will not be acceptable. If the Government cannot provide CAD files for the project drawings, mylar (reproducible) drawings will be provided. The contractor will then be required to comply with all requirements indicated herein by the use of hand drafting.

b. Progress As-built Prints: During construction the Contractor is responsible for maintaining up to date one set of paper prints to show as-built construction conditions. These prints shall be kept current and available on the job site at all times. All changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accordingly and neatly recorded as they occur by means of details and notes. The as-built prints will be jointly inspected for accuracy and completeness by the Contracting Officer's Representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate. Partial payment will be withheld (amount to be determined) if the monthly review of as-built drawings reveals inaccuracies or incompleteness of as-built conditions. Progress as-builts shall show the following information, but not limited thereto:

(1) The location and description of any utility lines, valves, or other installations of any kind within the construction area. The location includes dimensions to permanent features. Average depth below surface shall also be indicated. The location of all underground utility lines, valve boxes or other items shall be located using a minimum of two tie-point dimensions. All dimensions must be taken from permanent structures or points that will remain after the construction work is completed.

(2) The location and dimensions of any changes with the building and structure.

(3) Correct grade or alignment of roads, structures or utilities if any changes were made from the contract plans.

(4) Correct elevations if changes were made in site grading

(5) Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabricated, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

(6) The topography and grades of all drainage installed or affected as part of the project construction.

(7) All changes, which result from contract modifications.

(8) Where contract drawings or specifications allow options, only the option selected for construction shall be shown on the as-built prints.

(9) Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler and irrigation systems.

(10) All amendments to the contract drawings issued during the solicitation period shall be posted on the as-built drawings.

c. Hand Drafting: If mylars only are provided to the Contractor, they shall be updated using hand drafting. Only personnel proficient in the preparation of engineering drawings to standards satisfactory and acceptable to the Government shall be employed to modify the mylar reproduction drawings or prepare additional new drawings. All additions and corrections to the contract drawings shall be neat, clean and legible, and shall match the adjacent line work and/or lettering being annotated in type, density, size and style. All drafting work shall be done using the same medium (pencil, plastic lead or ink) that was employed on the original contract drawings and with graphic lead on paper base material. The title block to be used for any new as-built drawings shall be similar to that used on the original contract drawings.

d. Protection of Records: The Contractor shall be responsible for the protection and safety of mylars and CAD record until returned to the Contracting Officer. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at his expense.

e. 50% As-Built Update: At the 50% point in construction of this project (as determined by progress payments) the Contractor will update the CAD files of the project drawings in the appropriate CAD program to show as-built conditions as above, and submit an updated computer disk and one set of prints to the Contracting Officer for approval. If mylars only are provided to the Contractor, they shall be updated at this stage using hand-drafting as specified herein, and the Contractor shall submit one set of prints to the Contracting Officer for approval. Any required corrections will be made by the Contractor before payment will be approved for this item. The Contractor must use the updated CAD record or mylar drawings to produce required prints.

f. Preliminary Record Drawing Submittal: At least thirty calendar (30) days before the anticipated date of final acceptance inspection the Contractor shall deliver two copies of progress prints showing final as-built conditions to the Contracting Officer for review and approval. These prints shall correctly show all the features of the project as it has been constructed, adding such additional drawings as may be necessary. They shall be printed from the CAD files updated in the appropriate CAD program, or from updated mylars if mylars only were provided to the Contractor. Within ten days, the Government will provide the Contractor one set of prints indicating required corrections to the preliminary submittal. Contractor will correct and resubmit within 5 days. Any required subsequent review and resubmission periods will each be accomplished within 5 days. Upon Government approval of the preliminary submittal, the Contractor will prepare final record drawings.

g. Record Drawing Submission: In the appropriate CAD program each drawing shall be marked with the words "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in font which will print at least 3/16" high. All revisions to the original contract drawings will be dated in the revision block. All prints and mylars must be reproduced from the updated CAD files. If mylars only were provided to the Contractor, they shall be hand-lettered or stamped as indicated above, and revisions shown in revision block. A minimum of 5 calendar days before the anticipated date of final acceptance inspection of the project the Contractor shall deliver to the Contracting Officer:

- Three (3) CD's (ROM) of CAD files of Record Drawings.
- One (1) set of Mylar Record Drawings
- One (1) copy of prints of Record Drawings.

Failure to make an acceptable submission of Record Drawings will delay the Final Acceptance Inspection for the project and shall be cause for withholding any payment due the Contractor under this contract..

h. Property: All paper prints, reproducible drawings and CAD files will become property of the Government upon final approval. Approval and acceptance of the final record drawings shall be accomplished before final payment is made to the Contractor.

i. Payment: No separate payment will be made for the as-built and record drawings or updating of CAD files required under this contract, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor.

## **8. PHYSICAL DATA**

Information and data furnished or referred to below are not intended representations or warranties but are furnished for information only. It is expressly understood that the Government will not be responsible for any deduction, interpretation, or conclusion drawn therefrom by the Contractor: (FAR 52.236-4) (APR 1984). The drawings show existing conditions in a general way, and it shall be the responsibility of the Contractor to verify all distances and locations in the field.

a. Weather Conditions: Climatological data determined from records of the NATIONAL WEATHER SERVICE FORECAST OFFICE UPTON, NEW YORK, Central Park New York City Weather Station

- Mean Annual Temperature: 55 degrees F.
- Mean Annual Precipitation: 47 inches

See paragraph 31 for time extensions for unusually severe weather.



b. Survey and Subsurface Investigations: The physical conditions indicated on the Contract Drawings and the Specifications are the result of site investigations by survey and SPT (Standard Penetration Testing) sampling. While the Government's procedures for subsurface investigations may produce representative information at their respective locations, local variation characteristics of the subsurface materials of this region are to be expected. Should any question or discrepancy arise, the condition should be independently confirmed by the Contractor.

c. Transportation Facilities: Interstate 495, and Local Route 11 are located in the vicinity of the Project area. The Contractor shall make his own investigation of available roads for transportation, load limits of bridges and roads, and other road conditions affecting the transportation of materials, equipment, supplies and other facilities to the site. The Contractor shall also construct such temporary haul roads and bridges as may be necessary for the conduct of his work. Any such temporary construction shall be restored to its original condition at the completion of the Contract. All costs for the use of existing transportation facilities, for the construction of temporary facilities, and for maintenance, repair, removal and restoration shall be the responsibility of the Contractor.

#### **9. PAYMENT FOR MATERIALS DELIVERED OFF-SITE**

Pursuant to the Contract Clauses in this contract titled "Payments Under Fixed-Price Construction Contracts", materials delivered to the Contractor at locations other than the site of work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the Contract Clauses are fulfilled. Payment for items delivered to locations other than the work site will be limited to those materials which have been approved, if required by the technical provisions; those materials which have been fabricated to the point where they are identifiable to an item of work required under this contract. Such payment will be made only after receipt of paid or receipted invoices with cancelled check showing title to the items in the prime contractor and including the value of materials and labor incorporated into the item.

#### **10. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (EFARS 52.2/9108 (f))**

a. Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a Contractor or subcontractor at any tier shall be based on actual cost data when the government can determine both ownership and operating costs for each piece of equipment or equipment groups of similar serial and series from the Contractor's accounting records. When both ownership and operating costs cannot be determined from the Contractor's accounting records, equipment costs shall be based upon the applicable provisions of EP 1110-1-8,\* "Construction Equipment Ownership and Operating Expense Schedule," Region 1. Working conditions shall be considered to be average for determining

equipment rates using the schedule unless specified Otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces or equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retrospective pricing, the schedule in effect at the time the work was performed shall apply.

(\* This manual can be ordered from the Government Printing Office by calling Tel. No. (202) 783-3238. There is a charge for the manual.)

b. Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d) (ii) and FAR 31.205-36 substantiated by certified copies of paid invoices. Rates for equipment rented from an organization under common control, lease-purchase or sale-leaseback arrangements will be determined using the schedule except that rental costs leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated leases are allowable. Costs for major repair and overhaul are unallowable.

c. When actual equipment costs are proposed and the total amount of the pricing action is over \$25,000, cost or pricing data shall be submitted on Standard Form 1411, "Contract Pricing Proposal Cover Sheet." By submitting cost or pricing data, the Contractor grants to the Contracting Officer or an authorizing representative the right to examine those books, records, documents and other supporting data that will permit evaluation of the proposed equipment costs. After price agreement the Contractor shall certify that the equipment costs or pricing data submitted are accurate, complete and current.

#### **11. ALTERATIONS IN CONTRACT (APR 1984)**

Portions of this contract are altered as follows:

Add the following sentence to paragraph "g" of basic contract clause, SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (1984 APR):

"Upon completing the work under this contract, the Contractor shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the equipment is completed and accepted."

Alt.1 (APR 1984) (FAR 52.236-21)

#### **12. AVAILABILITY AND USE OF UTILITY SERVICES (APR 1984)**

The responsibility shall be upon the Contractor to provide and maintain at his own expense adequate supply of electricity, water, and sanitary facilities for his use for construction purposes and the use of his construction forces and to install and maintain necessary supply connections

for same, but only at such locations and in such manner as may be approved by the Contracting Officer's representative. All installations shall comply with all applicable codes, standards and requirements. Before final acceptance, temporary connections installed by the Contractor shall be removed in a manner satisfactory to the Contractor Officer.

### **13. LAYOUT OF WORK**

a. The Contractor will establish the following base lines and bench marks at the site of the work: (Monuments and bench marks as shown on the drawings.)

b. From the base lines and bench marks established, the Contractor shall complete the layout of the work and shall be responsible for all measurements that may be required for the execution of the work to the location and limit marks prescribed in the specifications or on the contract drawings, subject to such modifications as the Contracting Officer may require to meet changed conditions or as a result of necessary modifications to the contract work.

c. The Contractor shall furnish, at his own expense, such stakes, templates, platforms, equipment, tools and material, and all labor as may be required in laying out any part of the work from the base lines and bench marks established by the Government. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Contracting Officer until authorized to remove them, and if such marks are destroyed by the Contractor or through his negligence prior to their authorized removal, they may be replaced by the Contracting Officer, at his discretion, and the expense of replacement will be deducted from any amounts due or to become due the Contractor. The Contracting Officer may require that work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking of the work.

### **14. NOT USED**

### **15. BULLETIN BOARD**

Immediately upon beginning of work under this contract, the Contractor shall provide at the job site a weatherproof glass-covered bulletin board for displaying the fair employment poster, wage rates, and safety bulletins and posters. Emergency telephone numbers and reporting instructions for ambulance, physician, hospital, fire and police shall be posted. The bulletin board shall be located in a conspicuous place easily accessible to all and legible copies of the aforementioned data shall be displayed until work under the contract is completed. No direct payment will be made for the bulletin board.

### **16. NOT USED**

### **17. SUPERINTENDENCE OF SUBCONTRACTORS (JAN 1965)**

a. The Contractor shall be required to furnish the following, in addition to the superintendence required by the Contract Clause titled, "SUPERINTENDENCE BY THE CONTRACTOR".

(1) If more than 50% and less than 70% of the value of the contract work is subcontracted, one superintendent shall be provided at the site and on the Contractor's payroll to be responsible for coordinating, directing, inspecting and expediting the subcontract work.

(2) If 70% or more of the value of the work is subcontracted, the Contractor shall be required to furnish two such superintendents to be responsible for coordinating, directing, inspecting and expediting the subcontract work.

b. If the Contracting Officer, at any time after 50% of the subcontracted work has been completed, finds that satisfactory progress is being made, he may waive all or part of the above requirement for additional superintendence subject to the right of the Contracting Officer to reinstate such requirement if at any time during the progress of the remaining work he finds that satisfactory progress is not being made. (DoD FAR Supplement 52.236-7008)

#### **18. SCHEDULING AND DETERMINATION OF PROGRESS**

Pursuant to the Contract Clause, SCHEDULES FOR CONSTRUCTION CONTRACTS, the Contractor shall prepare and submit for approval a practicable project schedule. The type of schedule and detailed requirements as well as timing of this submittal shall be as specified in specification section "PROJECT SCHEDULE".

This schedule will be the medium through which the timeliness of the Contractor's construction effort is appraised. When changes are authorized that result in contract time extensions, Contractor shall submit a modified schedule for approval by the Contracting Officer.

The terms of Contract Clause, SCHEDULES FOR CONSTRUCTION CONTRACTS, with reference to overtime, extra shifts, etc., may be invoked when the Contractor fails to start or complete work features or portions of same by the time indicated by the milestone dates on the approved project schedule, or when it is apparent to the Contracting Officer from the Contractor's actual progress that these dates will not be met.

Neither on the project schedule as originally submitted nor on any updated periodic schedules which the Contractor is required to prepare and submit, shall the actual progress to be entered include or reflect any materials which even though on the site, are not yet installed or incorporated in the work. For payment purposes only, an allowance will be made by the Contracting Officer of up to 100 percent of the invoiced cost of materials or equipment delivered to the site but not incorporated into the construction, pursuant to Contract Clauses, PAYMENT UNDER FIXED- PRICE CONSTRUCTION CONTRACTS. The making of such an allowance will be contingent

upon a determination by the Contracting Officer that the Contractor's compliance with the quality control requirements of the contract is more than satisfactory.

**19. PROCEDURES FOR SUBMISSION AND PAYMENT OF ALL CONTRACT PAYMENTS**

In addition to the requirements contained in the Contract Clause entitled "PAYMENTS UNDER FLXED-PRICE CONSTRUCTION CONTRACTS" and to implement the requirements of the Prompt Payment Act Amendments of 1988, P.L. 100-496, the following shall apply to all payments made under this contract:

a. At the time of submission of the progress chart, the contractor shall submit for approval by the Contracting Officer or his authorized representative a breakdown of the contract work which shall be to the degree of detail required by the Contracting Officer or his representative to effect reasonable progress payments. The Contracting Officer or his representative shall review this breakdown within 30 calendar days after receipt and either advise the contractor that it is approved or disapproved, and if disapproved the reasons for disapproval. Only after the breakdown is approved shall any payment invoice be accepted from the contractor and any payment made to him. The Contracting Officer can determine if it is in the best interest of the Government to make payment without an approved breakdown, however, in no case shall more than 10% of the contract amount be paid unless the breakdown is approved.

b. The contractor shall submit his request for payment by submission of a proper invoice to the office or Person(s) designated in subparagraph (c). For purposes of payment a "proper invoice" is defined as the following:

(1) An estimate of the work completed in accordance with the approved breakdown indicating the percentage of work of each item and the associated costs.

(2) A properly completed Eng Form 93 and 93a (where required).

(3) All contractual submissions indicated elsewhere in this contract to be submitted with payment, such as updated progress schedules, updated submittal registers, etc.

(4) The following certification executed by a responsible official of the organization authorized to bind the firm. A "responsible official" would be either a corporate officer, partner, or owner, in the case of a sole proprietorship

I hereby certify, to the best of my knowledge and belief, that --

(a) The amounts requested are only for performance in accordance with the specifications, terms and conditions of the contract;

(b) Payments to subcontractors and suppliers have been made from previous payments received under the contract and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract requirements and the requirements of chapter 39 of Title 31, United States Code; and

(c) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.

(d) All required prime and subcontractor payrolls have been submitted.

(Name) \_\_\_\_\_

(Title) \_\_\_\_\_

(Date) \_\_\_\_\_

c. The Government shall designate the office or person(s) who shall first receive the invoice submissions and the Contractor shall be so notified at the preconstruction conference. In addition to the designated Contracting Officer, the Contractor shall at the same time submit one copy of the detailed breakdown and the Eng Form 93 and 93a Form to the Area Engineer.

d. The Government representative shall return any request for payment which is deemed defective within 7 days of receipt and shall specify the defects. If the defect concerns a disagreement as to the amount of work performed and/or the amount of the payment being submitted, the Government and the contractor's representative should meet to resolve the differences and reach agreement. Upon agreement, the contractor shall submit a new breakdown and Eng Form 93 (and 93a) and any other submissions requiring correction. These will be incorporated with the previous submittal and will then constitute a proper invoice.

e. If agreement cannot be reached, the Government shall determine the proper amount per Contract Clause, PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS and process the payment accordingly. In this event, a "proper invoice" for Prompt Payment Act purposes will not have been submitted to the Government.

f. The Government shall pay the contractor in accordance with the following time frames:

(1) Progress Payments - From the date a "proper invoice" is received, in accordance with subparagraphs b and d of this clause, the Government will issue a check within 14 calendar days.

(2) Reduction in Retainage Payment. If during the course of the contract, a reduction in retainage payment is required, the Government shall

issue a check within 30 calendar days after the approval of the release to the contractor by the Contracting Officer or his authorized representative.

(3) Final Payment. A final payment request shall not be considered valid until the contractor has fulfilled all contract requirements including all administrative items, payrolls, warranties, etc. and has submitted a release of claims. When the contractor has fulfilled all contract requirements and a "proper invoice" has been submitted, the Government shall issue a check within 30 days from the date of acceptance of the project by the Contracting Officer.

## **20. SUBMISSION OF CLAIMS**

The following shall be submitted to the Contracting Officer at the following address: U.S. Army Corps of Engineers, New York District, 26 Federal Plaza, New York, New York 10278-0090:

- a. claims referencing or mentioning the Contracting Disputes Act of 1978
- b. requests for a written decision by the Contracting Officer
- c. claims certified in accordance with the Contract Disputes Act of 1978

No other Government representative is authorized to accept such requests. A copy shall also be provided to the Authorized Representative of the Contracting Officer.

The Contractor shall also provide the Contracting Officer with a copy of any requests for additional time, money or interpretation of contract requirements which were provided to the Authorized Representative of the Contracting Officer and which have not been resolved after 90 days.

## **21. PROGRESS PAYMENTS**

Progress Payments made pursuant to the PAYMENTS TO CONTRACTOR clause for any item of work in the bid schedule shall be based on the contract unit price or lump sum amount set forth in the bid schedule for that item of work. If the amount of the unit price or lump sum bid for any item of work is in excess of 125% of the Government estimate for such item, the Contracting Officer may require the contractor to produce cost data to justify the price of the bid item. Failure to justify the bid item price to the satisfaction of the Contracting Officer may result in payment of an amount equal to 125% of the Government estimate for such bid item upon completion of work on the item and payment of the remainder of the bid item price upon final acceptance of all contract work.

## **22. PERFORMANCE EVALUATION OF CONTRACTOR (1985 JAN HQ USACE)**

As a minimum, the Contractor's performance will be evaluated upon final acceptance of the work. However, interim evaluation may be prepared

at any time during contract performance when determined to be in the best interest of the Government.

The format for the evaluation will be SF 1421, and the Contractor will be rated either outstanding, satisfactory, or unsatisfactory in the areas of Contractor Quality Control, Timely Performance, Effectiveness of Management, Compliance with Labor Standards, and Compliance with Safety Standards. The Contractor will be advised of any unsatisfactory rating, either in an individual element or in the overall rating, prior to completing the evaluation, and all contractor comments will be made a part of the official record. Performance Evaluation Reports will be available to all DoD Contracting Officers for their future use in determining Contractor responsibility, in compliance with DFARS 36.201(c)(1).

### **23. SAFETY AND HEALTH REQUIREMENTS MANUAL**

The Contractor shall comply with all pertinent provisions of the latest edition of the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385- 1-1, in effect on the date of the solicitation, this manual may be obtained on the web at:

<http://www.usace.army.mil/publications/eng-manuals/em385-1-1/>

The latest edition, as referenced in the Accident Prevention Clause of the CONTRACT CLAUSES, is dated 3 November 2003.

Before commencing the work, the Contractor shall - (1) Submit a written proposal for implementing the Accident Prevention Plan; and (2) Meet with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to administration of the overall safety program.

### **24. AUTHORIZED CONSTRUCTION AREA AND TRESPASSING**

The Contractor shall not inflict damage upon land and properties outside the authorized construction area by unwarranted entry upon, passage through, damage to, or disposal of, material on such land or property. The Contractor may make a separate agreement with any other party, regarding the use of, or right to, land or facilities outside the contract area. If such an agreement is made, it shall be in writing and a copy shall be furnished the Contracting Officer. The Contractor shall hold and save the Government, its officers, and agents free from liability of any nature or kind arising from any trespassing or damage occasioned by his operations.

### **25. DAMAGE TO WORK**

The responsibility for damage to any part of the permanent work shall be as set forth in the article of the contract clause entitled "PERMITS AND RESPONSIBILITIES". However, if in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by



flood, earthquake, hurricane, severe coastal storm or tornado, which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor will make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump-sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work, an equitable adjustment, pursuant to Contract Clause entitled CHANGES, will be made as full compensation for the repairs of that part of the permanent work for which there are not applicable contract unit or lump-sum prices. Except as herein provided, damage to all work, utilities, materials, equipment, and plant, including temporary construction and utilities, pavements, and other property along the routes used by the Contractor's pipelines and/or land vehicles, shall be repaired to the satisfaction of the Contracting Officer, the State of New York, and the utilities companies, at the contractor's expense regardless of the cause of such damage.

**26. ENVIRONMENTAL LITIGATION (1974 NOV) (OCE)**

a. If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the "Suspension of Work" clause of this contract. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

b. The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment. (ECI 7-671.10)

**27. LABOR-ADDITIONAL REQUIREMENTS**

Fringe benefits statement: The method of payment of applicable fringe benefits will be indicated on DD Form 879, Statement of Compliance, and attached to each weekly payroll.

**28. CRANE AND DRAGLINE SAFETY REQUIREMENTS**

In addition to meeting all applicable requirements of OSHA standards and Section 16 of the U. S. Corps of Engineers Manual, "Safety and Health Requirements", EM 385-1-1, dated 3 September 1996, all cranes used in performing the work set forth in these specifications shall be equipped with geared boom hoists or otherwise provided with mechanisms which will prevent the booms from failing free. Cranes that are equipped with booms that can be lowered either by gravity or by power shall have the mechanisms for operating the booms by gravity made inoperative so that the booms cannot be lowered by gravity. The booms of all cranes and draglines shall also be equipped with shock absorbing type back stops to prevent them from overtopping.

All cranes shall have a red strobe light and two flags attached to the end of the boom. The flags shall be 18-inches square and international orange in color. The strobe does not need to be flashing during daylight hours or when the boom is lowered to the ground at night. The strobe shall be flashing when operating during weather in which visibility is reduced or when operating at night. The strobe shall remain flashing if the boom remains elevated at night.

Cranes may only be operated by qualified operators. Proof of qualification shall be in writing. Crane Operators shall be designated as qualified by a source which qualifies crane operators (see EM 385-1-1, paragraph 16.C.04 and 16.C.05).

**29. NOT USED**

**30. ACCESS AREA**

Areas designated on the drawings as "Access to Working Area" shall be used by the Contractor solely for the purpose of access to and from the "Work Limits". The Contractor shall arrange his use of these access areas so as to minimize interference with the property owners' (or user's) access or normal use.

**31. TIME EXTENSIONS (APR 1984)**

a. Notwithstanding any other provisions of this contract, it is mutually understood that the time extensions for changes in the work will depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The change order granting the time extension may provide that the contract completion date will be extended only for those specific elements so delayed and that the remaining contract completion dates for all other portions of the work will not be altered and may further provide for an equitable readjustment of liquidated damages under the new completion schedule. (FAR 52.212-6)

b. Time Extensions for Unusually Severe Weather.

1. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the contract

clause entitled "Default: (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

a. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

b. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

2. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(7)	(6)	(7)	(5)	(6)	(5)	(6)	(5)	(5)	(4)	(4)	(6)

3. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph 2, above, the contracting officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Default (Fixed Price Construction)".

### **32. VEHICULAR AND OTHER TRAFFIC CONTROL**

The Contractor shall be required to provide and maintain barriers, flagmen and warning devices during construction and hauling operations which

may interfere with vehicular and other traffic. The Contractor shall also be required to effect necessary traffic control as required by the appropriate agencies. All safety precautions shall be subject to the approval of the Contracting Officer.

### **33. STORAGE AREAS**

The Contractor may store his required materials and equipment within the "Work Limits" shown on the drawings. No storage will be allowed outside the designated work limits and the Contractor shall make his own arrangements with parties or agencies involved for storage areas outside the work limits.

### **34. VERIFICATION OF SMALL BUSINESS UTILIZATION**

a. This clause is applicable to small business concerns whose contracts exceed \$1,000,000.

b. In accordance with the clause at FAR 52.219-8, entitled UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS, in effect on the date of this contract, the Contracting Officer may survey the extent of small and small disadvantaged business utilization under this contract. The Contractor may be required to report to the Contracting Officer statistical data on the number and dollars amounts of subcontracting awards with small businesses and small disadvantaged businesses.

c. As appropriate, the Contracting Officer may require one or more follow-up reports to the initial report.

d. The Contractor agrees to insert this clause in any subcontract that may exceed \$1,000,000, including this subparagraph (d).

### **35. PRECONSTRUCTION CONFERENCE**

a. A preconstruction conference will be arranged by the Contracting Officer, or his Representative, after award of contract and before commencement of work. The Contracting Officer's representative will notify the Contractor of the time and date set for the meeting. At this conference the Contractor will be oriented with respect to Government procedures and line of authority, contractual, administrative, and construction matters. Additionally, a schedule of required submittals will be discussed.

b. The Contractor shall bring to this conference the following items in either completed or draft form:

- The Contractor's order of work.
- Accident Prevention Plan. (See Accident Prevention Clause in Section 00700 and paragraph 23 of this Section concerning Safety and Health Requirements Manual)
- Quality Control Plan. (See Section 01451)
- Letter appointing Superintendent.

- List of subcontractors, if any.

### **36. COORDINATION CONFERENCES**

Routine coordination conferences will be scheduled by the Contracting Officer throughout the life of this contract. Coordination conferences will be held to discuss contract administration, Contractor quality control, phasing, scheduling, and other aspects relating to this construction. The Corps of Engineers and the Contractor will be represented at each of these meetings. Similar information concerning replacement personnel shall be forwarded to the Contracting Officer, should any replacement be required at any time during the life of this contract. Coordination conferences will be scheduled to occur on a weekly basis.

### **37. CONTRACTOR WORKING HOURS**

Unless specifically authorized by the Contracting Officer, contract work shall be restricted to the hours of 7:00 A.M. to 6:00 P.M., Mondays through Saturdays. No work will be permitted on Sundays and Federal and State legal holidays.

### **38. PARTNERSHIP IMPLEMENTATION PLAN**

To more effectively accomplish this contract, the Government proposes to form a partnership with the Contractor. This partnership would draw on the strengths of each organization in an effort to achieve a quality product within budget and on schedule. This partnership would be bilateral in make-up and participation would be required. The Contractor shall retain the services of a facilitator with experience as a Partnering Consultant. The facilitator satisfactory to both parties shall be hired who would be responsible to arrange for an offsite location, provide all workshop materials, and compile and distribute a completed partnering agreement to all participants within 30 days of the partnering session. Conference site location will be coordinated with the Contracting Officer for approval. Contractor should plan for the attendance of approximately 10-12 individuals from the Government, 5-7 representatives from the City of Northport, 3-5 individuals from the State of New York, in addition to the Contractor's and Sub-contractor's personnel. All costs associated with partnership implementation will be borne by the Contractor. It is anticipated that the initial partnership conference will require the facilitator and a conference site. After the initial meeting, monthly partnership meetings will be hosted by the Contractor at the project site.

### **39. CONSTRUCTION PROJECT SIGNS AND PUBLIC SAFETY SIGN**

The Contractor shall construct three signs, one for project identification, one to show on-the-job safety performance, and one public safety sign. Sample sign drawings together with mounting and fabrication details are provided at the end of this section. The signs shall be erected within 15 calendar days after the date of Notice to Proceed. The project

identification and safety performance signs are to be displayed side by side and mounted for reading by passing viewers. The public safety sign shall be the same size as the project signs.

Exact placement location will be designated by the Contracting Officer. Panels are fabricated using HDO (High Density Overlay) plywood with dimensional lumber uprights and bracing. The sign faces are non-reflecting vinyl. All legends are to be die-cut or computer-cut in the sizes and type-faces specified and applied to the white panel background following the graphic formats shown on the attached sheets. The Communications Red panel on the left side of the construction project sign with Corps signature (reverse version) is screen printed onto the white background.

The Contractor shall maintain the signs in good condition throughout the construction period. No separate payment will be made for erecting and maintaining the signs and all costs in connection therewith will be considered the obligation of the Contractor. Upon completion of the project, the Contractor shall remove the signs from the project site.

#### **40. INSURANCE PROCURED BY CONTRACTOR**

a. The Contractor shall procure and maintain during the entire period of this performance under this contract the attached insurance policies:

(1) Commercial General Liability Insurance in limits of not less than Five Million Dollars (\$5,000,000) combined single limit per occurrence for bodily injury, death, personal injury and property damage, including but not limited to coverage for Broad Form Property Damage. Such coverage shall not contain any environmental exclusion clause and there shall be no exclusions for property damage arising out of explosion, collapse or underground property damage hazards and no exclusion for waterfront activities.

(2) The policies described above shall be endorsed (i) to include the property owner, Village of Northport and the State of New York as additional insured and (ii) to provide that notice of an occurrence to the insurance company from any insured shall serve as notice from all insured.

(3) Comprehensive Automobile Liability Insurance in limits of not less than five million dollars combined single limit per occurrence for bodily injury, death, and property damage covering all owned, non-owned and hired vehicles in connection with the work to be performed in connection with this permit.

(4) Certificates of Insurance evidencing the issuance of all insurance required hereby, and guaranteeing at least thirty (30) days prior notice to the Government of cancellation or non-renewal, shall be delivered

to The New York Department of Environmental Protection and Village of Northport, prior to entry of the Government's contractors upon the project area, or, in the case of new or renewal policies replacing any policies expiring during the period, no later than thirty (30) days before the expiration dates of such expiring policies.

b. Prior to the commencement of work hereunder, the Contractor shall furnish to the Contracting Officer a certificate or statement of the above required insurance. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation or any material change in the policies adversely affecting the interests of the Government in such insurance shall not be effective for such a period as may be prescribed by the laws of the State in which this contract is to be performed and in no event less than thirty (30) days after written notice thereof to the Contracting Officer.

c. The Contractor agrees to insert the substances of this clause, including paragraph c., in all subcontracts hereunder.

#### **41. CONTINUING CONTRACTS (ALTERNATE) (MAR 1995) - EFARS**

a. This is a continuing contract, as authorized by Section 10 of the River and Harbor Act of September 22, 1922 (33 U.S. Code 621). The payment of some portion of the contract price is dependent upon reservation of funds from future appropriations. The responsibilities of the Government are limited by this clause notwithstanding any contrary provision of the "Payment to the Contractor" clause or any other clause of this contract.

b. Funds are not available at the inception of this contract to cover the entire contract price. The sum of \$25,000 has been reserved for this contract and is available for payment to the contractor during the current fiscal year. It is expected that Congress will make appropriations for future fiscal years from which additional funds, together with funds provided by one or more non-federal project sponsors will be reserved for this contract. The liability of the United States for payments beyond the funds reserved for this contract is contingent on the reservation of additional funds.

c. Failure to make payments in excess of the amount currently reserved, or that may be reserved from time to time, shall not be considered a breach of this contract, and shall not entitle the contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs (f) and (g) below. No such failure shall constitute a breach

of this contract, except that this provision shall not bar a breach-of-contract action if an amount finally determined to be due as a termination allowance remains unpaid for one year due solely to a failure to reserve sufficient funds therefore.

d. The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The Contracting Officer will promptly notify the Contractor in writing of any additional funds reserved for the contract.

e. If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the contractor shall give written notice to the contracting officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under this contract during that fiscal year. This notice shall be given not less than 45 nor more than 60 days prior to the estimated date of exhaustion.

e. No payments will be made after exhaustion of funds except to the extent that additional funds are reserved for the contract. If and when sufficient additional funds are reserved, the contractor shall be entitled to simple interest on any payment that the contracting officer determines was actually earned under the terms of this contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.

f. Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall not constitute a breach of this contract and shall not entitle the contractor to any price adjustment under a "Suspension of Work" or similar clause or in any other manner under this contract.

g. An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

h. If, upon expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments otherwise due, the Contractor, by written notice delivered to the Contracting Officer at anytime before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such termination shall be considered a termination for the convenience of the Government.

i. If at any time it becomes apparent that funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the Contractor because of work performed and to be performed under the contract during the fiscal year, the Government reserves the



right, after notice to the Contractor, to reduce said reservation by the amount of such excess.

**42. NOT USED**

**43. NOT USED**

**44. CONSTRUCTION STAGING**

Access to site working area and construction shall be staged as shown on Contract Drawing, CCC-C402-02 General Site Layout & Site Access Plan and as described in Section **01501 PROTECTION AND MAINTENANCE OF TRAFFIC.**

**45. TOPOGRAPHIC SURVEY**

Topographic mapping provided on plans was compiled from field surveys taken on February 25, 2004 and March 2004. Topographic mapping to be field verified by contractor.

- End of Section -

-- End of Document --

## PROJECT IDENTIFICATION SIGN CIVIL PROJECT

The graphic format for this 4' x 6' sign panel follows the legend guidelines and layout as specified below. The large 4' x 4' section of the panel in the right is to be white with black legend. The 2' x 4' section of the sign on the left with the full corps Signature (reverse version) is to be screen printed Communications Red on the white background. The castle insignia will be furnished by the Government in pressure sensitive vinyl for affixing by the Contractor. See attached sheet for fabrication and mounting guidelines.

**SAMPLE:**

**Legend Group 1:** One to two-line description of Corps relationship to project  
Color: white  
Typeface: 1.25" Helvetica Regular  
Maximum line length: 19"

**Legend Group 2:** Division or District Name (optional, Place below 10.5" Reverse Signature (6" Castle)  
Color: white  
Typeface: 1.25" Helvetica Regular

**Legend Group 3:** One-to three-line project title legend describes the work being done under this contract.  
Color: Black  
Typeface: 3" Helvetica Bold  
Maximum line length: 42"

**Legend Group 4:** One-to two-line identification of project or facility (civil works) or name of sponsoring department (military).  
Color: Black  
Typeface: 1.5" Helvetica Regular  
Maximum line length: 42"

**Cross-align the first of Legend Group 4 with the first line of the Corps Signature (US Army Corps) as shown.**

**Legend Group 5a-b:** One-to-five line identification of prime contractors including: type (architect, general contractor, etc.), corporate or firm name, city, state. Use of Legend Group 5 is optional.  
Color: Black  
Typeface: 1.25" Helvetica Regular  
Maximum line length: 21"

All typography is flush left and rag right upper and lower case with initial capitals only as shown.  
Letter and word spacing to follow Corps standards as specified in \* Appendix D

**Dimensions are in inches**

Sign Type	Legend	Panel Size	Post Size	Specification Code	Mounting Height	Color Bkg/Lgd
CID-01	various	4' x 6'	4' x 4'	HDO-3	48"	WH-RD/BK

**Show non-Federal local partner's name and logo -  
New York State Department of Environmental Conservation**

\* Refers to the U.S. Army Corps of Engineers, "Sign Standards Manual", EPS-310-1-6.

## 00800 - 24

## SAFETY PERFORMANCE SIGN

The graphic format, color, size and type-faces used on the sign are to be reproduced exactly as specified below. The title with First Aid logo in the top section of the sign, and the performance record captions are standard for all signs of this type. Legend Group 2 and 3 below identify the project and the contractor and are to be placed on the sign as shown. Safety record numbers are mounted on individual metal plates and are screw-mounted to the background to allow for daily revisions to posted safety performance record.

Legend Group 1: Standard two-line title "safety is a Job Requirement", with (8" od.) Safety Green First Aid logo. Color: To match PMS 347 Typeface: 3" Helvetica Bold Color: Balck

Legend Group 2: One- to two-line project title legend describes the work being done under this contract and name of host project. Color: Black Typeface: 1.5" Helvetica Regular Maximum line length: 42"

Legend Group 3: One - to two-line identification: name of prime contractor and city, state address. Color: Black Typeface: 1.5" Helvetica Regular Maximum line length: 42"

Legend Group 4: Standard safety record captions as shown. Color: Black

Typeface: 1.25" Helvetica Regular

Replaceable numbers are to be mounted on white .060: aluminum plates and screw-mounted to background. Color: Black Typeface: 3" Helvetica Regular Plate size: 2.5"x.5"

All typography is flush left and rag right, upper and lower case with initial capitals only as shown. Letter- and word-spacing to follow Corps standards as specified in Appendix D. \*

3"	31"	3"	8"	3"
----	-----	----	----	----

6"

4.5"

10.5"

2.25"

2.25"

4"

1.875"

3"

1.875"

3"

1.875"

3.875"

**Safety is a Job Requirement**

NORTHPORT HARBOR  
VILLAGE OF NORTHPORT, NEW YORK  
SECTION 14  
EMERGENCY SHORELINE PROTECTION PROJECT

**Contractor:**

This project has operated:

	5	6
	5	6
		0

Days without & lost time injury

Total days worked on this contract

Lost time injuries

4.875"

4.875"

4.875"

3"

3"	2"	17"
----	----	-----

Dimensions inches.

See attached sheet for fabrication and mounting guidelines.

\* Refer to the U.S. Army Corps of Engineers, "Sign Standards Manual", EPS-310-1-6.

Sign Type	Legend Size	Panel Size	Post Size	Specifications Code	Mounting Height	Color Bkg/Lgd
CID-02	various	4"x4"	4"x4"	HDO-3	48"	WH/BK-GR

2.5"	2.5"	2.5"
------	------	------

.875"

3.125"

.975"

5	6	2
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# US ARMY

CORPS of ENGINEERS New York District



RED CASTLE

NORTHPORT HARBOR  
VILLAGE OF NORTHPORT, NEW YORK  
SECTION 14

EMERGENCY SHORELINE PROTECTION PROJECT

CONTRACTOR:

FUNDED BY: FEDERAL % LOCAL %

COMPLETION DATE:

## FOR YOUR SAFETY

1. DO NOT ENTER DESIGNATED WORK AREAS
2. OBEY ALL STATE AND LOCAL REGULATIONS  
CONCERNING PROHIBITED ACTIVITIES

RED LETTER

DISTRICT ENGINEER COL RICHARD J. POLO JR.

Project Sign- Civil Works

SECTION 00900

WAGE RATES

## Section 00800 - Special Contract Requirements

WAGE RATES

General Decision Number: NY030013 07/30/2004 NY13

Superseded General Decision Number: NY020013

State: New York sg 7/30/04

Construction Types: Building, Heavy, Highway and Residential

Counties: Nassau and Suffolk Counties in New York.

BUILDING CONSTRUCTION PROJECTS, RESIDENTIAL CONSTRUCTION  
PROJECTS (including single family homes and apartments up to  
and including 4 stories), HEAVY CONSTRUCTION PROJECTS, HIGHWAY  
CONSTRUCTION PROJECTS

Modification Number Publication Date

0	06/13/2003
1	02/27/2004
2	04/09/2004
3	04/23/2004
4	05/14/2004
5	05/28/2004
6	06/11/2004
7	07/16/2004
8	07/23/2004
9	07/30/2004

ASBE0012-001 06/28/2004

Rates	Fringes
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Asbestos Workers/Insulator

includes application of  
all insulating materials,  
protective  
coverings, coatings and  
finishing to all types of  
mechanical systems.....\$ 40.36      22.86  
Hazardous Material Handler.....\$ 24.00      6.20

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BOIL0005-001 09/01/2003

	Rates	Fringes
Boilermaker.....	\$ 39.50	24.40+a

## FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Thanksgiving Day, Memorial  
Day, Independence Day, Labor Day and Good Friday, Friday  
after Thanksgiving, Christmas Eve Day and New Year's Eve

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BRNY0001-001 07/01/2003

	Rates	Fringes
Bricklayer.....	\$ 36.42	20.31
Stonemason.....	\$ 37.36	10.67

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CARP0007-016 07/01/2002

	Rates	Fringes
Carpenters:		
Building.....	\$ 32.42	22.23
Heavy & Highway.....	\$ 32.42	22.23
Residential.....	\$ 24.00	14.41



-----  
 CARP0740-001 07/01/2003

	Rates	Fringes
Millwright.....	\$ 37.06	30.46

-----

CARP1456-009 07/01/2003

	Rates	Fringes
Carpenters:		
DIVERS TENDERS.....	\$ 34.25	26.05
DIVERS.....	\$ 46.30	26.05
DOCKBUILDERS.....	\$ 37.70	26.05
PAPERHANGERS.....	\$ 23.88	10.48
PILEDRIVERMAN.....	\$ 37.70	26.05
SOFT FLOOR LAYERS.....	\$ 38.78	26.05

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CARP1536-001 07/01/2003

	Rates	Fringes
Carpenters:		
TIMBERMEN.....	\$ 34.47	26.05

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ELEC0025-001 05/01/2004

	Rates	Fringes
Electrician.....	\$ 42.00	23.76

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ELEC0025-002 05/01/2004

	Rates	Fringes
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## Electricians:

Maintenance Unit.....	\$ 33.59	35.5%+2.96
Telephone Unit.....	\$ 30.69	47.5%+1.14
Wiring or single or multiple family dwellings and apartments up to and including 2 stories	\$ 27.20	13.44
Wiring or single or multiple family dwellings and apartments up to and including 2 stories.....	\$ 27.20	13.44

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ELEC1049-002 04/04/2004

Rates      Fringes

## Line Construction:

Substation and Switching structures pipe type cable installation and maintenance jobs or projects; Railroad electrical distribution/ transmission systems maintenance (when work is not performed by railroad employees) Overhead and Underground transmission/distribution line work. Fiber optic, telephone cable and equipment;		
Groundman.....	\$ 21.12	12.60
Heavy Equipment Operator...	\$ 28.16	12.60

Lineman & Cable Splicer....\$ 35.20	12.60
Tree Trimmer.....\$ 22.28	7.76

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ELEV0001-002 03/17/2004

Rates	Fringes
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#### Elevator Mechanic

Elevator Constructor.....\$ 41.10	19.697+a
Modernization and Repair....\$ 32.95	18.563+a

#### FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Lincoln's Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

PAID VACATION: Employer contributes 8% of regular basic hourly rate as vacation pay for employees with more than 5 years of service, and 6% for employees with less than 5 years of service.

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ENGI0138-001 06/01/2004

#### BUILDING CONSTRUCTION

Rates	Fringes
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#### Power equipment operators:

GROUP 1.....\$ 39.72	23.79+a
GROUP 2.....\$ 37.67	23.79+a
GROUP 3.....\$ 36.32	23.79+a
GROUP 4.....\$ 33.58	23.79+a
GROUP 5.....\$ 32.20	23.79+a

## NOTES:

## Hazmat premiums:

Level A	3.50
Level B	2.50
Level C	1.50

Oiler on truck cranes with boom length of 100 ft. or more  
.25

## FOOTNOTE:

a. Paid Holidays: New Year's Day, Lincoln's Birthday, Washington's Birthday or President's Day (in lieu of Lincoln's or Washington's Birthday), Good Friday, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Christmas Day or days celebrated as such. Any holiday that falls on a Saturday will be celebrated on Friday.

## POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt spreader, backhoe crawler capacity over caterpillar 225 and Komatsu 300, Boiler (thermoplastic), Cherry picker, over 50 tons, CMI or Maxim spreader, concrete pump (with oiler), crane (crawler truck), crane (on barge), crane (stone setting), crane (structural steel), crane (with clam shell), derrick, dragline, dredge, gradall, grader, hoist (3 drum), loading machine (bucket cap of 10 yds or over micro-trap, with compressor (negative air machine), milling machine, large pile driver, power winch, Stone setting/structural steel, power winch (truck mounted/stone steel) powerhouse, road paver scoop, carry-all, scraper in tandem shovel, sideboom tractor,

sideboom tractor (used in tank work), stone spreader (self propelled tank work), zamboni (ice machine)

GROUP 2: Backhoe, boom truck, bulldozer, cherypicker, conveyor (multi), dinky locomotive, forklift, hoist, 2 drum, loading machine, loading machine (front end) mechanicl compactors, (machine drawn), mulch machine (machine-fed), power winch, other than stone/structural steel, power winch (truck mounted other than stone steel) pump (hydraulic, with boring machine), roller, (asphalt), scoop (carry-all scraper), tower crane (maintenance man), trenching machine

GROUP 3: Compressor (structural steel), Compressor (2 or more in battery), concrete finishing mchine, concrete spreader, conveyor, curb machine (asphalt or concrete), curing machine, fireman, hoist (1 drum), micro-trap, (self contained, negative air machine), pump (4 inches or over), pump (hydraulic), pump (jet), pump (sumbersible), pump (well point), pulvi-mixer, ridge cutter, roller (dirt), striping machine, vac-all, welding and burning, welding machine (pile work), welding machine (structural steel)

GROUP 4: Compressor, compressor (on crane), compressor (pile work), compressor (stone setting), concrete breaker, concrete saw or cutter, forklift (walk behind, power operated), generator-pile work, generator, hydra hammer, mechanical compactors (hand operated), oiler (truck crane), pin puller, portable heaters, powerbroom, power buggies, pump (double action diaphgrgm), pump (gypsum), trench machine (hand), welding machine

GROUP 5: Batching plant (on site of job), generator (small), mixer (with skip), mixer (2 small with or without skip), mixer (2 bag or over, with or without skip), mulch machine,

oiler, pump (centrifugal, up to 3 inches), root cutter,  
stump chipper, tower crane (oiler), tractor (caterpillar or  
wheel vibrator)

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ENGI0138-002 06/01/2004

## HEAVY & HIGHWAY

	Rates	Fringes
Power equipment operators:		
GROUP 1.....	\$ 40.81	23.79+a
GROUP 2.....	\$ 38.09	23.79+a
GROUP 3.....	\$ 36.72	23.79+a
GROUP 4.....	\$ 33.99	23.79+a
GROUP 5.....	\$ 32.62	23.79+a
GROUP 6.....	\$ 26.66	8.95+10%

## NOTES:

### Hazmat premiums:

Level A	3.50
Level B	2.50
Level C	1.50

### Truck and Crawler Cranes long boom premiums:

boom lengths (including jib) 100-149 ft	.50
boom lengths (including jib) 150-249 ft	.75
boom lengths (including jib) 250-349 ft	1.00
boom lengths (including jib) 350 ft	1.50

Cranes using clamshell buckets .25

Front end loader 10 yds and above .25

Oiler on truck cranes with

boom length of 100 ft. or more .25

## FOOTNOTE:

a. Paid Holidays: New Years Day, Lincoln's Birthday, Washington's Birthday or Presidents Day (in lieu of Lincoln's or Washington's Birthday, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day or days celebrated as such. Any holiday that falls on Saturday will be celebrated on Friday.

## POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt spreader, backhoe crawler (capacity over caterpillar 225 and komatsu 300), boiler (thermoplastic), boring machine (post hole), cgherry picker (over 50 ton), CMI or maxim spreader, concrete pump, with oiler, crane (crawler truck), crane (on barge), crane (stone setting) crane (structural steel), crane (with clam shell), derrick, dragline, dredge, gradall, grader, hoist (3 drums), loading machine (bucket) capacity of 10 yards or over, micro-trap (with compressor-negative air machine), milling machine (large), piledriver, power winch (stone setting structural steel), power winch (truck mounted/stone steel), power-house, road paver, scoop, carry all (scraper in tandem), shovel, sideboom tractor, sideboom tractor (used in tank work), stone spreader (self-propelled), tank work, tower crane

GROUP 2: Bulldozer, Backhoe, Boom Truck, Boring machine/augur, Cherrypicker, Conveyor (multi), Dinky Locomotive, Forklift, Hoist (2 drum), Loading Machine, Loading Machine (front end), Mechanical Compactor (machine drawn), Mulch Machine (machine- fed), Power Winch (other than stone/structural steel), Power Winch (truck mounted/other than stone steel), Pump Hydraulic (with

boring machine), Roller (asphalt), Scoop (carry-all, scraper), Tower Crane (maintenance man), Trenching Machine, Vermeer Cutter, Work Boat

GROUP 3: Curb Machine (asphalt or concrete), Maintenance Engineer (small equipment), Maintenance engineer (well-point) Mechanic (fieldman), Micro-Trap (self contained, negative air machine), Milling Machine (small), Pulvi-mixer, Pump (4 inches or over), Pump Hydraulic, Pump Jet, Pump Submersible, Pump (well point), Roller Dirt, Vac-All, Welding and burning, Compressor (structural steel), Compressor (2 or more battery), Concrete Finishing Machine, Concrete Spreader, Conveyor, Curing Machine, Fireman, Hoist (one drum), Ridge Cutter, Striping Machine, Welding Machine (pile work), Welding Machine (structural Steel).

GROUP 4: Compressor, Compressor on crane, Compressor (pile work), Compressor (stone setting), Concrete Breaker, Concrete Saw or Cutter, Fork Lift (walk behind, power operated), Generator- Pile Work, Generator, Hydra Hammer, Mechanical Compoactors (hand operated), Oiler (truck crane), Pin Puller, Portable Heaters, Powerbroom, Power buggies, Power Grinders, Pump (double action diaphragm), Pump gypsum, Pump (single action 1 to 3 inches), Trench Machine hand, Welding Machine

GROUP 5: Batching Plant (on site of job), Generator (small), Grinder, Mixer (with skip), Mixer (2 small with or without skip), Mixer (2 bag or over, with or without skip), Mulch Machine, Oiler, Pump (centrifugal, up to 3 inches), Root Cutter, Stump Chipper, Tower Crane (oiler), Track Tamper (2 engineers, each), Tractor (caterpillar or wheel), Vibrator, Work boat (deckhand),



## GROUP 6: Well drillers

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 IRON0046-003 07/01/2002

	Rates	Fringes
Ironworker		
METALLIC LATHERS.....	\$ 31.05	23.03

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IRON0197-001 07/01/2003

	Rates	Fringes
Ironworker		
STONE DERRICKMAN.....	\$ 35.76	29.07

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IRON0361-001 07/01/2003

	Rates	Fringes
Ironworker (STRUCTURAL).....	\$ 36.20	36.93

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IRON0580-001 07/01/2003

	Rates	Fringes
Ironworker, Ornamental.....	\$ 35.65	28.50

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LABO0066-001 07/01/2004

## BUILDING

	Rates	Fringes
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Laborers:

Laborers.....	\$ 25.85	19.27
Plasterers tenders.....	\$ 25.85	19.27

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LABO0078-001 12/01/2003

	Rates	Fringes
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Asbestos Worker

ASBESTOS (Removal,  
Abatement, Encapsulation  
or Decontamination of  
asbestos); LEAD; &  
HAZARDOUS WASTE LABORERS  
(Hazardous Waste,  
Hazardous Materials,  
Biochemical and Mold  
Remediation, HVAC, Duct  
Cleaning, Re-spray  
Fireproofing, etc.....

\$ 25.50	6.81
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LABO1298-001 06/01/2004

HEAVY & HIGHWAY

	Rates	Fringes
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Laborers:

Asphalt Rakers; Formsetters.	\$ 29.00	17.17+a
Asphalt Shovelers, Roller		
Boys & Tampers.....	\$ 28.23	17.17+a
Regular Laborers.....	\$ 25.90	17.17+A

FOOTNOTES:

Laborers working in a hazardous material hot zone shall

receive an additional 20% premium.

Where the contract provides for night work outside the regular hours of work, the employees shall be paid at straight time plus a 20% night work premium for the 8 hours worked during the night.

Firewatch work performed after regular hours shall be paid an additional 10% premium. Second and Third Shift work will be paid at a 10% premium.

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PAIN0009-002 05/01/2002

	Rates	Fringes
Painters:		
GLAZIERS.....	\$ 32.20	20.17
Painters, Drywall Finishers.	\$ 30.25	15.42
Spray, Scaffold,		
Sandblasting.....	\$ 33.25	15.42
Structural Steel (over 20		
ft), Sandblasting.....	\$ 33.25	15.42

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PAIN1974-002 07/03/2002

	Rates	Fringes
Painters:		
DRYWALL TAPERS/POINTERS.....	\$ 33.82	

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PLAS0260-003 07/01/1999

	Rates	Fringes
Plasterer.....	\$ 27.91	15.16

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 \* PLAS0780-001 07/01/2004

	Rates	Fringes
Cement Mason.....	\$ 40.00	21.10

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PLUM0200-001 11/01/2002

	Rates	Fringes
Plumber		
BUILDING CONSTRUCTION:.....	\$ 40.19	20.08
RESIDENTIAL CONSTRUCTION:....	\$ 17.18	5.70

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PLUM0638-001 12/01/2003

	Rates	Fringes
Plumber		
SERVICE FITTERS.....	\$ 26.30	2.55
SPRINKLER FITTERS,		
STEAMFITTERS.....	\$ 39.82	28.57

Service Fitter work shall consist of all repair, service and maintenance work on domestic, commercial and industrial refrigeration, air conditioning and air cooling, stoker and oil burner apparatus and heating apparatus etc., including but not exclusively the charging, evacuation, leak testing and assembling for all machines for domestic, commercial and industrial refrigeration, air conditioning and heating apparatus. Also, work shall include adjusting, including capacity adjustments, checking and repairing or replacement of all controls and start up of all machines and repairing all defects that may develop on any system for domestic,

commercial and industrial refrigeration and all air conditioning, air cooling, stoker and oil burner apparatus and heating apparatus regardless of size or type.

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ROOF0154-001 10/01/2000

	Rates	Fringes
Roofer.....	\$ 27.50	18.79

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SHEE0028-002 01/29/2004

	Rates	Fringes
Sheet metal worker.....	\$ 39.49	27.48

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TEAM0282-002 07/01/2004

	Rates	Fringes
Truck drivers:		
Asphalt.....	\$ 30.685	23.6025+a+b
Euclids & turnapulls.....	\$ 31.25	23.6025+a+b
High Rise.....	\$ 32.31	23.6525+a+b

#### FOOTNOTES:

a. PAID HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Election Day, Veterans' Day (Armistice Day), Thanksgiving Day and Christmas Day. Employees working two (2) days in the calendar week in which a holiday falls are to be paid for such holiday, provided that they shape each remaining workday during such calendar week.

b.VACATION: For each 15 days worked with the contract year an employee will receive one day vacation with pay, maximum vacation of 3 weeks per year. In addition, an employee who qualifies for two weeks (10 days) vacation or more with pay and who has been continuously employed by his employer for six years before the close of any contract year, shall be entitled to one extra day vacation; seven years before the close of any contract year, shall be entitled to two extra days vacation; eight years before the close of any contract year, shall be entitled to three extra day vacation; nine years before the close of any contract year, shall be entitled to four extra day vacation; ten years before the close of any contract year or over shall be entitled to three weeks paid vacation with pay, but in no event shall any employee be entitled to more than three weeks vacation pay per year.

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

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## WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U.S. Department of Labor

200 Constitution Avenue, N.W.

Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION



SECTION 00901

WATER QUALITY CERTIFICATION

**New York State Department of Environmental Conservation**

**Division of Environmental Permits, Region One**

Building 40 - SUNY, Stony Brook, New York 11790-2356

Phone: (631) 444-0365 • FAX: (631) 444-0360

Website: [www.dec.state.ny.us](http://www.dec.state.ny.us)



Erin M. Crotty  
Commissioner

July 7, 2004

Tom Pfeifer  
New York District, Corps of Engineers  
Jacob K. Javits Federal Building  
26 Federal Plaza  
New York, New York 10278-0090

Re: Application # 1-4726-00321/00009  
Village of Northport/Property, Woodbine Avenue

Dear Mr. Pfeifer:

The Department of Environmental Conservation (DEC) has reviewed your most recent submittal of "Draft Final" plans, titled Emergency Bank Stabilization Block 1, Lots 5, 6.1, 7 & 9.1 at Woodbine Avenue, dated May 2004 and we have the following comments.

The Department has no objection to the project as proposed in the above referenced plans. As per the Special Conditions of the permit, please submit 5 copies of final plans for approval. Once the final plans have been approved, they will be stamped NYSDEC approved and a copy of stamped plans will be returned to you.

Please do not hesitate to call me at (631) 444-0351 if you have any questions or wish to discuss this matter further.

Sincerely,

Naomi Brown  
Environmental Analyst

cc: J. Pavacic  
K. Graulich  
file

**New York State Department of Environmental Conservation**

**Division of Environmental Permits, Region One**

Building 40 - SUNY, Stony Brook, New York 11790-2356

Phone: (631) 444-0365 • FAX: (631) 444-0360

Website: [www.dec.state.ny.us](http://www.dec.state.ny.us)



Erin M. Crotty  
Commissioner

May 6, 2004

Leonard Houston  
U.S. Army Corp of Engineers  
New York District  
26 Federal Plaza  
New York, NY 10278-0090

RE: Permit #1-4726-00321/00009  
Woodbine Avenue Project

Dear Mr. Houston:

This Department has completed a review of your proposal to stabilize the failing and slumping bluff at the west side of Woodbine Avenue in the Village of Northport. The Department has determined that the proposed rock revetment/rip-rap (as shown in the conceptual plan entitled "EXHIBIT 1 - SECTION 14 EMERGENCY BANK STABILIZATION, BLOCK 1, LOTS 5, 6.1, 7 & 9.1 AT WOODBINE AVENUE - sheets 5 of 22 and 6 of 22," dated May 2004 and prepared by URS Corporation and the US Army Engineer District Corps of Engineers, New York, New York, does not meet the standards for Water Quality Certifications as codified in Article 15, Title 5 of the New York State Environmental Conservation Law and the Department's Use and Protection of Waters regulations, 6 NYCRR Part 608. The Department has concluded that construction of the rock revetment/rip-rap design would fill and permanently destroy approximately 1,800 square feet of significant benthic habitat of the Soft Clam (*Mya arenaria*) and subtidal areas utilized by juvenile life stages of winter flounder (*Pseudopleuronectes americanus*), which is currently experiencing extreme population stresses in New York State, and the Long Island area in particular. As you know, the National Marine Fisheries Service has designated much of the underwater areas around Long Island as Essential Fish Habitat for the winter flounder - those "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The subtidal areas which would be filled and destroyed by the rock revetment/rip-rap proposal are significant for winter flounder stocks, especially in that substantial portions of the shoreline in Northport Harbor and the overall Huntington Harbor complex have been adversely altered by past human activities which have already eliminated much of the former quality winter flounder habitat. The intertidal areas and subtidal flats in this area of Northport Harbor are known particularly for the density of marine benthic organisms and their overall ecological productivity and this rock revetment/rip-rap proposal would result in significant and substantial permanent adverse impacts to this area. Furthermore, it is expected that construction and installation activities associated with this rock revetment/rip-rap proposal would result in significant adverse increases in turbidity in the project area and its immediate surroundings, and therefore to water quality, to the detriment of marine organisms, in particular sessile filter-feeders and

some motile juvenile forms. Accordingly, the Department hereby expresses its objection to this proposal on the basis noted above and will formally deny this proposal if the US Army Corps of Engineers intends on advancing this plan any further.

However, the Department is acutely aware of the need to stabilize the slope at this location. The Department is also aware of US Army Corps preliminary plans for construction of a sheet pile wall at the toe of the existing slope and extending between the two existing bulkheads at the north and south ends of the site. Therefore please be advised that the Department is issuing the enclosed Water Quality Certification for a project design consisting of a sheet pile wall with associated toe armor. This Water Quality Certification authorizes sheathing generally at or above the location of apparent high water, transitioning into the adjacent bulkheads, and allows the placement of toe armor seaward of the sheet pile wall. Please note that special condition #1 of the permit requires that final design plans be submitted to the Department a minimum of 30 days prior to proposed commencement of construction and/or upon the commencement of the project design bidding process, whichever is the longer time frame. The Department shall review said final design plan for conformance with the conditions of this permit and advise the permittee of its approval within 10 days of receipt of the final design plan. We have presumed that construction may occur from the water; therefore, special condition #2 limits the time the construction barge may rest on shoals and mud flats to 45 days. In addition, no dredging is authorized at the site.

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your Water Quality Certification. Please carefully read all permit conditions and **special permit conditions** contained in this permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather.

Sincerely,

Mark Carrara  
Deputy Regional Permit Administrator

MCC/mcc

Enclosures

cc: Peter A. Scully, Regional Director, NYSDEC Region 1  
John Pavacic, NYSDEC, Region 1  
Chuck Hamilton, NYSDEC, Region 1  
Karen Graulich, NYSDEC, Region 1  
Luci Collins, NYSDEC, Albany  
Michael Stankiewicz, NYSDEC, Albany  
Richard Tuers, NYSDEC Albany  
Eric Star, NYSDEC, Region 1  
file

## NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER 1-4726-000321/00009
FACILITY/PROGRAM NUMBER(S)



EFFECTIVE DATE May 6, 2004
EXPIRATION DATE(S) May 31, 2009

TYPE OF PERMIT ☒ New ☐ Renewal ☐ Modification ☐ Permit to Construct ☐ Permit to Operate

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Article 15, Title 5: Protection of Waters                  | <input type="checkbox"/> Article 17, Titles 7, 8: SPDES                          | <input type="checkbox"/> Article 27, Title 9; 6NYCRR 373: Hazardous Waste Management  |
| <input type="checkbox"/> Article 16, Title 15: Water Supply                         | <input type="checkbox"/> Article 19: Air Pollution Control                       | <input type="checkbox"/> Article 34: Coastal Erosion Management                       |
| <input type="checkbox"/> Article 15, Title 15: Water Transport                      | <input type="checkbox"/> Article 23, Title 27: Mined Land Reclamation            | <input type="checkbox"/> Article 36: Floodplain Management                            |
| <input type="checkbox"/> Article 15, Title 15: Long Island Wells                    | <input type="checkbox"/> Article 24: Freshwater Wetlands                         | <input type="checkbox"/> Articles 1, 3, 17, 19, 27, 37; 6NYCRR 380: Radiation Control |
| <input type="checkbox"/> Article 15, Title 27: Wild, Scenic and Recreational Rivers | <input type="checkbox"/> Article 25: Tidal Wetlands                              |   |
| <input checked="" type="checkbox"/> 6NYCRR 608: Water Quality Certification         | <input type="checkbox"/> Article 27, Title 7; 6NYCRR 360: Solid Waste Management |   |

PERMIT ISSUED TO U.S. Army Corps of Engineers, New York District		TELEPHONE NUMBER (212) 264-2122	
ADDRESS OF PERMITTEE 26 Federal Plaza, New York, NY 10278-0090			
CONTACT PERSON FOR PERMITTED WORK Leonard Houston, Chief, Environmental Branch, USACOE		TELEPHONE NUMBER (212) 264-2122	
NAME AND ADDRESS OF PROJECT/FACILITY Village of Northport property, 149-165 Woodbine Avenue, west side of Woodbine Avenue, east shore of Northport Harbor, south of Main Street, north of State Route 25A, Northport			
COUNTY Suffolk	VILLAGE Northport	WATERBODY Northport Harbor	NYTM COORDINATES 638.8 E, 4528.5 N
DESCRIPTION OF AUTHORIZED ACTIVITY: CONSTRUCT A SHEET PILE WALL AT THE TOE OF THE EXISTING SLOPE, THE MAJORITY OF SAID WALL WHICH SHALL GENERALLY BE AT OR ABOVE APPARENT HIGH WATER, AND EXTENDING BETWEEN TWO EXISTING BULKHEADS AT THE NORTH AND SOUTH ENDS OF THE SITE IN ORDER TO STABILIZE AN APPROXIMATELY 120-FOOT PORTION OF THE SHORELINE. PLACE ARMOR STONE AT SEAWARD TOE OF WALL. ALSO, CONDUCT ASSOCIATED CLEARING, GRUBBING AND GRADING OF EXISTING SLOPE LANDWARD OF SHEET PILE WALL.			

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified (see page 3 & 4) and any Special Conditions (see page 2) included as part of this permit.

PERMIT ADMINISTRATOR: Mark Carrara	ADDRESS Region 1 Headquarters Bldg. #40, SUNY, Stony Brook, NY 11790-2356		
AUTHORIZED SIGNATURE	DATE May 6, 2004	Page 1 of 5	

**SPECIAL CONDITIONS**

1. Final design plans (which include a slope revegetation plan) must be submitted to the Department a minimum of 30 days prior to proposed construction and/or at the commencement of project design bidding process, whichever is the longer time frame. The Department shall review said final design plan for conformance with the conditions of this permit and advise permittee of its approval within 10 days of receipt of the final design plan.
2. Construction barge may rest on the shoal and mud flat area for purposes of installing the shoreline structure for a period not to exceed 45 days.
3. Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in tidal wetlands and or protected buffer areas.
4. There shall be no disturbance to vegetated tidal wetlands or protected buffer areas as a result of the permitted activity.
5. All disturbed areas where soil will be temporarily exposed or stockpiled for longer than one (1) week shall be contained by a continuous line of staked hay bales/silt curtain (or other NYSDEC approved method) placed on the seaward side between the fill and wetland or protected buffer area. Tarps are authorized to supplement these approved methods.
6. All areas of soil disturbance resulting from this project shall be stabilized immediately following project completion or prior to permit expiration, whichever comes first. The approved methodologies are as follows:
  - a. Stabilization of the disturbed area with appropriate vegetation (grasses, etc.).
  - b. Stabilized as per specifications identified on the approved plans.
  - c. Temporarily stabilized with straw or hay mulch or jute matting or other similar natural fiber matting within 1 week of final grading. Temporary stabilization shall be maintained until a mature vegetative cover is established.
7. All fill shall consist of "clean" sand, gravel, or soil (not asphalt, flyash, broken concrete or demolition debris).
8. No excavation of the beach is authorized for the purpose of obtaining fill or stone materials.
9. All fill must be graded to match the elevation of the land immediately adjacent to the bulkhead.
10. All peripheral berms, cofferdams, rock revetments, seawalls, gabions, bulkheads etc. shall be completed prior to placement of any fill material behind such structures.
11. There shall be no discharge of runoff or other effluent over or through any bulkhead or shoreline stabilization structure or into any tidal wetland or adjacent area.

**SPECIAL CONDITIONS**

12. Item A of the "NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS" and which is entitled "Permittee Accepts Legal Responsibility and Agrees to Indemnification" is included by the State of New York as the permit-issuing authority under the Clean Water Act. These specific permit conditions (Permittee Obligation Item A) and Item 2 (Additional General Conditions for Articles 15 (Title 5), 24, 25, 34 and 6 NYCRR Part 608 [Tidal Wetlands]) do not, nor are they intended to, apply to, abrogate or annul any obligation, responsibility or liability on the part of the State of New York to the Federal Government under the executed Project Cooperation Agreement for the jointly funded, Federal/State project for which this Permit (Water Quality Certification) is granted. Pursuant to that Agreement, the State of New York remains legally responsible to hold and save the Federal Government free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the project and any project-related betterments, including liabilities arising from Item A, except for damages due to the fault or negligence of the Federal Government or its contractors.

**NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS****Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification**

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's undertaking of activities or operation and maintenance of the facility or facilities authorized by the permit in compliance or non compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent acts.

**Item B: Permittee's Contractors to Comply with Permit**

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

**Item C: Permittee Responsible for Obtaining Other Required Permits**

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

**Item D: No Right to Trespass or Interfere with Riparian Rights**

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

**GENERAL CONDITIONS****General Condition 1: Facility Inspection by the Department**

The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

**General Condition 2: Relationship of this Permit to Other Department Orders and Determinations**

Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

**General Condition 3: Applications for Permit Renewals or Modifications**

The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

The permittee must submit a renewal application at least:

- a) 180 days before expiration of permits for State Pollutant Discharge Elimination System (SPDES), Hazardous Waste Management Facilities (HWMF), major Air Pollution Control (APC) and Solid Waste Management Facilities (SWMF); and
- b) 30 days before expiration of all other permit types.

Submission of applications for permit renewal or modification are to be submitted to:

NYSDEC Regional Permit Administrator, Region 1, SUNY Bldg #40, Stony Brook NY 11790-2356

**General Condition 4: Permit Modifications, Suspensions and Revocations by the Department**

The Department reserves the right to modify, suspend or revoke this permit in accordance with 6 NYCRR Part 621. The grounds for modification, suspension or revocation include:

- a) materially false or inaccurate statements in the permit application or supporting papers;
- b) failure by the permittee to comply with any terms or conditions of the permit;
- c) exceeding the scope of the project as described in the permit application;
- d) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.



**ADDITIONAL GENERAL CONDITIONS FOR ARTICLES 15 (TITLE 5), 24, 25, 34 AND 6NYCRR PART 608****( TIDAL WETLANDS )**

1. If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.
2. The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.
3. Granting of this permit does not relieve the applicant of the responsibility of obtaining any other permission, consent or approval from the U.S. Army Corps of Engineers, U.S. Coast Guard, New York State Office of General Services or local government which may be required.
4. All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.
5. Any material dredged in the conduct of the work herein permitted shall be removed evenly, without leaving large refuse piles, ridges across the bed of a waterway or floodplain or deep holes that may have a tendency to cause damage to navigable channels or to the banks of a waterway.
6. There shall be no unreasonable interference with navigation by the work herein authorized.
7. If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.
8. If granted under 6NYCRR Part 608, the NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.
9. At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work and, if required, a survey.
10. All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or his agent as part of the permit application and stamped approved by the Department.

## SECTION 01311

## PROJECT SCHEDULE: BAR CHART

## PART 1 GENERAL

## 1.1 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-07 Schedules

Initial Project Schedule; GA  
Revised Project Schedule; GA  
Periodic Schedule Updates; GA

## SD-09 Narrative Reports with Schedule Updates

## PART 2 PRODUCTS

(NOT APPLICABLE)

## PART 3 EXECUTION

## 3.1 GENERAL

Pursuant to the Contract Clause, SCHEDULES FOR CONSTRUCTION CONTRACTS, and the Special Contract Requirement SCHEDULING AND DETERMINATION OF PROGRESS the contractor shall prepare and submit for approval a practicable project schedule. The schedule will be submitted within five (5) days after receipt of Notice to Proceed or as otherwise determined by the Contracting Officer.

## 3.2 BASIS FOR PAYMENT

The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

## 3.3 PROJECT SCHEDULE

The Project Schedule shall be in the form of chart consisting of a series of bars graphically indicating the sequence proposed to accomplish each work feature or operation. Each bar will represent a work feature, system or series of activities within the construction project. The chart shall be prepared to show the starting and completion dates of all work features on a linear horizontal time scale beginning with date of Notice to Proceed and indicating calendar days to completion. Interdependence of status of activities shall be shown. Horizontal time scale shall allow identification of the first work day of each week, which shall be identified. Space between bars shall be allowed for future revisions and notations.

### 3.4 PROGRESS CURVE

With the Project Schedule the contractor shall also submit for approval a progress curve which reflects the intended schedule for completing the work. The progress curve (S-Curve) will be plotted to reflect Cumulative Progress (Percent) based on placement along the y-axis and Time along the x-axis.

### 3.5 SCHEDULE AND PROGRESS CURVE UPDATES

Approved Schedule and Progress Curve will be updated monthly during the entire duration of construction. Not later than four days after the Monthly Progress Meeting the contractor shall submit updated Project Schedule and Progress Curve. The updated versions shall include all approved contract revisions, progress of each activity to date of submission, and adjustments. Contractor shall also provide a very brief narrative report as required to indicate any problem areas, anticipated delays, impact on schedule, and corrective action.

### 3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly on-site meeting or other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor will describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

-- End of Section --

## SECTION 01312A

## QUALITY CONTROL SYSTEM (QCS)

## PART 1 GENERAL

## 1.1 SUMMARY

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data

## 1.1.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

## 1.1.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01311, PROJECT SCHEDULE: BAR CHART, Section 01330, SUBMITTAL PROCEDURES, and Section 01451A, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

## 1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on 3-1/2 inch

high-density diskettes or CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

### 1.3 SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

#### **Hardware**

IBM-compatible PC with 500 MHz Pentium or higher processor  
128+ MB RAM for workstation / 256+ MB RAM for server  
1 GB hard drive disk space for sole use by the QCS system  
3 1/2 inch high-density floppy drive  
Compact disk (CD) Reader, 8x speed or higher  
SVGA or higher resolution monitor (1024 x 768, 256 colors)  
Mouse or other pointing device  
Windows compatible printer (Laser printer must have 4+ MB of RAM)  
Connection to the Internet, minimum 56 BPS

#### **Software**

MS Windows 98, ME, NT, or 2000  
Word Processing software compatible with MS Word 97 or newer  
Latest version of : Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher  
Electronic mail (E-mail), MAPI compatible  
Virus protection software that is regularly upgraded with all issued manufacturer's updates

### 1.4 RELATED INFORMATION

#### 1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

#### 1.4.2 Contractor Quality Control (CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

## 1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

## 1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted by E-mail with file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer, a data diskette or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM). The QCS database typically shall include current data on the following items:

### 1.6.1 Administration

#### 1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

#### 1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

#### 1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

#### 1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

#### 1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to

track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

#### 1.6.2 Finances

##### 1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

##### 1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data by E-mail with file attachment(s). If permitted by the Contracting Officer, a data diskette may be used instead of E-mail. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

#### 1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01451A, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

##### 1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01451A, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

#### 1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

#### 1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

#### 1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

#### 1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

#### 1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

#### 1.6.4 Submittal Management

The Government will provide the initial submittal register, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

#### 1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay



activities, in accordance with Contract Clause "Schedules for Construction Contracts", or Section 01311, PROJECT SCHEDULE: BAR CHART, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01311 PROJECT SCHEDULE: BAR CHART). The updated schedule data shall be included with each pay request submitted by the Contractor.

#### 1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

### 1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

#### 1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

##### 1.8.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

##### 1.8.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

##### 1.8.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

### 1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions.

The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

#### 1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

-- End of Section --

## SECTION 01330

## SUBMITTAL PROCEDURES

## PART 1 GENERAL

## 1.1 SUMMARY

This section covers procedures to be used in making submittals called for in the contract documents. In contracts which contain specific "Contractor Quality Control" requirements, the Contractor's Quality Control Representative shall carry out duties associated with submittal procedures.

In contract which do not contain specific CQC requirements, reference to "CQC Representative" shall be interpreted as reference to the Contractor's authorized representative, and references to "CQC Requirements" or "CQC Clauses" shall be interpreted as "requirements or clauses elsewhere in the contract."

## 1.2 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

## SD-01 Preconstruction Submittals

A document, required of the Contractor, or through the Contractor, from a supplier, installer, manufacturer, or other lower tier Contractor, the purpose of which is to confirm the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other verifications of quality.

## SD-02 Shop Drawings

Submittals which graphically show relationship of various components of the work, schematic diagrams of systems, details of fabrication, layouts of particular elements, connections, and other relational aspects of the work.

## SD-03 Product Data

Preprinted manufacturer material describing a product, system, or material, such as catalog cuts.

## SD-04 Samples

Samples, including both fabricated and un-fabricated physical examples of materials, products, and units of work as complete units or as portions of units of work.

## SD-05 Design Data

Submittals, which provide calculations, descriptions, or documentation regarding the work.

## SD-06 Test Reports

Reports of inspections or tests, including analysis and interpretation of

test results.

#### SD-07 Certificates

Statement signed by an official authorized to certify on behalf of the manufacturer of a product, system or material, attesting that the product, system or material meets specified requirements. The statement must be dated after the award of the contract, must state the Contractor's name and address, must name the project and location, and must list the specific requirements, which are being certified.

#### SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material; including special notices and material safety data sheets, if any, concerning impedances, hazards, and safety precautions.

#### SD-09 Manufacturer's Field Reports

Daily reports from specially suppliers to the contractor that provide information, data, tests result for a product.

#### SD-10 Operation and Maintenance Data

Data, which forms a part of an operation and maintenance manual.

#### SD-11 Closeout Submittals

All data, documentations, information, and drawings to achieve contract closeout.

#### SD-12 Schedules

All data, documentations, information, and drawings to achieve contract closeout.

#### SD-13 Records

Documentation to record compliance with technical or administrative requirements.

### 1.3 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

#### 1.3.1 Government Approved

Government approval is required for all specification submittal items found in specifications having structural steel connections, extensions of design, Fire Protection/Life Safety, and Commissioning of HVAC, and other items as designated by the Contracting Officer. Government approval/acceptance (G) is also required for all submittals designated as such in the technical specifications. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings." The Government will review all submittals designated as deviating from the Solicitation or Accepted Proposal, as described below.

### 1.3.2 Information Only

All Contractor submittals not requiring Government approval/acceptance will be for information only. FIO submittals are identified in the approved submittal register Form 4288. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above. FIO Submittals will be retained at the project site and reviewed prior to Preparatory Meetings in accordance with CEGS-01451, CONTRACTOR QUALITY CONTROL.

### 1.3.3 Government Approval/Acceptance (G)

All submittals classified for Government Approval/Acceptance (G) are identified in the approved submittal register Form 4288. A code following the "G" designation indicates the approving authority; codes of "RO" for Resident Office approval and "DO" for Engineering approval.

### 1.4 APPROVED/ACCEPTANCE SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the CQC requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

### 1.5 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

### 1.6 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

## PART 2 PRODUCTS

(NOT APPLICABLE)

## PART 3 EXECUTION

### 3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each

submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) representative and each item shall be stamped, signed, and dated by the CQC representative indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

### 3.2 SUBMITTAL REGISTER (ENG FORM 4288)

At the end of this section is one set of ENG Form 4288 listing items of equipment and materials for which submittals are required by the specifications; this list is not all inclusive and numerous additional submittals will be required, particularly in Divisions 15 and 16. Columns "c" through "f" have been completed by the Government. The Contractor shall complete all other columns which apply to the Contractor, and submit the forms (hard copy plus associated electronic file) to the Contracting Officer for approval within 30 calendar days after Notice to Proceed (15 days if construction time is 180 days or less). If the Government supplies the ENG Form 4288 on the Resident Management System (RMS) electronic format, the contractor will be required to process and update the 4288 in RMS, and make appropriate electronic submissions to the Government. Otherwise, the Contractor shall enter the submittal register in the appropriate electronic format such as MS Excel, manually. In any case, the Contractor shall update the 4288 electronically, and shall submit it to the Government together with the monthly payment request. The approved submittal register will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated. NOTE: The Contractor is required to add additional entries to the Submittal Register for all items requiring multiple submittals, including Formwork Shop Drawings per Lift, Concrete Reinforcement per Lift, Concrete Lift Drawings per Lift, Multiple Shop Assembly Drawings, etc. These entries should be made prior to original submission of the submittal register within 30 days of Notice to Proceed.

### 3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals. An additional 10 calendar days shall be allowed and shown on the register for review and approval of submittals for food service equipment, refrigeration and HVAC control systems, computer software for specialty systems, electrical substations, and studies including electrical system coordination studies.

### 3.4 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item. If the contractor is required in another section of the specifications to utilize the Quality Control System (QCS), the contractor will be required to generate and process this form electronically using the QCS system.

### 3.5 SUBMITTAL PROCEDURE

Submittals shall be made as follows:

#### 3.5.1 Procedures

At the Quality Control Coordination meeting, or preconstruction conference, the Contractor shall ascertain the name and address of each individual, agency, or firm who is designated to normally receive items for approval, for information or samples. The contractor shall complete ENG Form 4025, entering each item requiring a separate approval action as a separate item on the form, for each transmittal. A transmittal may consist of one or more 4025 sheets. The transmittal, consisting of ENG Form 4025 plus all applicable submittals, is then sent to the appropriate individual. On critical items the Contractor is encouraged to confirm receipt via telephone. The Contractor shall submit seven copies of submittals for approval and one for items for information.

#### 3.5.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

### 3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control its procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

### 3.7 GOVERNMENT APPROVED/ACCEPTANCE SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four copies of the submittal will be retained by the Contracting Officer and three copies of the submittal will be returned to the Contractor.

### 3.8 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals.

The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

### 3.9 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

<hr/>	
CONTRACTOR	
(Firm Name)	
<hr/>	
_____	Approved
_____	Approved with corrections as noted on submittal data and/or attached sheet (s).
<hr/>	
SIGNATURE:	_____
TITLE:	_____
DATE:	_____
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-- End of Section --



## SUBMITTAL REGISTER

CONTRACT NO.  
10981991

TITLE AND LOCATION		CONTRACTOR																
Northport Slope Stabilization																		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	CONTRACTOR: SCHEDULE DATES		CONTRACTOR ACTION	APPROVING AUTHORITY				(r)				
							(h)	(i)		(j)	(k)	(l)	(m)		(n)	(o)	(p)	
TRANSMITTAL	SPESCT	DESCRIPTION ITEM SUBMITTED	PARRAG#	GOVT / CLASS / OFFICE / REVIEW														
NO	NO					SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS			
	01311	SD-07 Certificates																
		Initial Project Schedule																
		GA																
		Revised Project Schedule																
		Periodic Schedule Updates																
	01355A	SD-01 Preconstruction Submittals																
		Environmental Protection Plan			G													
	01356A	SD-07 Certificates																
		Mill Certificate or Affidavit		2.1.3	G													
	02218	SD-01 Preconstruction Submittals																
		Qualifications of Surveyor			G													
		Monitoring Existing Structures for			G													
		Movement																
		Monitoring of Existing Structures																
	02221	SD-06 Test Reports																
		Field Density Tests		3.13.1.1	G													
		Testing of Backfill Materials		3.13.1.2	G													
	02231	SD-03 Product Data																
		Materials Other Than Salable		3.6.1	G													
		Timber																
		SD-04 Samples																
		Herbicide		2.2														
	02275	SD-01 Preconstruction Submittals																
		Floating turbidity barrier		2.1.1	G													
	02300	SD-01 Preconstruction Submittals																

## SUBMITTAL REGISTER

CONTRACT NO.  
10981991

TITLE AND LOCATION				CONTRACTOR													
Northport Slope Stabilization				CONTRACTOR: SCHEDULE DATES		CONTRACTOR ACTION	APPROVING AUTHORITY						REMARKS				
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)		(n)	(o)	(p)	(q)
TRANSMITTAL NO	SPECIES	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	GOVT / CLASSIFIED / REVIEW OR NOT	SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION O N C O N D E	DATE OF ACTION	DATE FWD TO APPR AUTH/ FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION O N C O D E	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS	
02300	Unsatisfactory material disposal plan		G														
	SD-06 Test Reports																
	TESTING - Qualifications of the commercial testing laboratory or Contractor's testing facilities.	3.10															
	SD-07 Certificates																
	laboratory Certification	3.10	G														
	Physical Testing	3.10	G														
	Notification of Rock	3.8.1	G														
02340	SD-04 Samples																
	Cell Sections		G														
	Stake Anchors		G														
	Geosynthetic Components		G														
	SD-05 Design Data																
	Installer		G														
	Field Representative		G														
	SD-07 Certificates																
	Percentage of Carbon Black		G														
	Polyethylene Density		G														
02370A	SD-02 Shop Drawings																
	Layout	3.2.2	G														
	Obstructions Below Ground	3.2.4	G														
	SD-03 Product Data																
	Geotextile Fabrics	2.5	G														
	Seed Establishment Period																

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Northport Slope Stabilization																	
(a)	(b)	(c)	(d)	(e)	(f)	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION	APPROVING AUTHORITY				(r)			
						(g)	(h)	(i)		(j)	(k)	(l)	(m)		(n)	(o)	(p)
TRANSMITTAL		SPESCT	DESCRIPTION ITEM SUBMITTED	PARRAG#	GOVT CLASS / OFFICE NAME				ACT ION	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACT ION	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(b)		02370A	Equipment	1.4	G												
			Finished Grade	3.1.1	G												
			SD-04 Samples														
			Materials	1.4													
			SD-07 Certificates														
			Fill Material														
			Geotextile Fabrics	2.5													
			Erosion Control Plan	3.1													
			Construction Work Sequence	3.1													
			Schedule														
			Installer's Qualification	1.6													
			Recycled Plastic	2.3													
			Seed		G												
			SD-10 Operation and Maintenance														
			Data														
			Maintenance Instructions	3.6.1.1													
			Maintenance Record	3.6													
		02378A	SD-07 Certificates														
			Geotextile	2.1.1													
			: G														
		02380A	SD-03 Product Data														
			Riprap	2.2.2	G												
			Gaging Table Data														
			SD-04 Samples														
			Stone	1.4.1	G												
			SD-06 Test Reports														

## SUBMITTAL REGISTER

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Northport Slope Stabilization																		
(a)	(b)	(c)	(d)	(e)	(f)	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION	APPROVING AUTHORITY				(r)				
						(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)		(o)	(p)	(q)	
TRANSMITTAL NO		SPESCT	DESCRIPTION ITEM SUBMITTED	PARRAG#	GOVT / CLASS / AREA / WORK													
	02380A		Gradation Test	2.2.1.2	G													
			Evaluation Testing of Stone	2.2.1.1	G													
			Bulk Specific Gravity															
			SD-07 Certificates															
			Riprap	2.2.2	G													
			Laboratory	2.2.1.1	G													
			Weigh Scale Certification		G													
			Certified Weight Scale Tickets		G													
	02457		SD-02 Shop Drawings															
			PVC Sheet Piling	2.1	G													
			SD-03 Product Data															
			Driving	3.1.2.2														
			Pile Driving Equipment	3.1.1	G													
			Pulling and Redriving	3.1.5	G													
			Interlocked Joint Strength in		G													
			Tension Test															
			SD-06 Test Reports															
			Materials Tests	2.6.1														
			Vibration Monitoring		G													
	02491		SD-01 Preconstruction Submittals															
			Working Drawings and Shop		G													
			Drawings															
			Designer Qualifications	1.5.1	G													
			Fabricator Qualifications	1.5.2	G													
			Installer Qualifications	1.5.3	G													

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CONTRACTOR

**TITLE AND LOCATION**  
**Northport Slope Stabilization**

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## SUBMITTAL REGISTER

CONTRACT NO.  
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TITLE AND LOCATION				CONTRACTOR																
Northport Slope Stabilization																				
(a)	(b)	(c)	(d)	(e)	(f)	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION	APPROVING AUTHORITY				(r)						
						(g)	(h)	(i)		(j)	(k)	(l)	(m)		(n)	(o)	(p)	(q)		
		02821A	Location of gate, corner, end, and pull posts	3.2.1																
			SD-03 Product Data																	
			Chain-link fencing	2.1																
			Accessories	2.1.4																
			SD-06 Test Reports																	
			Weight in grams ounces for zinc coating	1.4.1																
			Thickness of PVC coating	1.4.1																
			Chemical composition and thickness of aluminum alloy coating	1.4.1																
			SD-07 Certificates																	
			Fabric	2.1.1																
			Posts	2.1.3																
			Braces	2.1.3																
			Framing	2.1.2																
			Rails																	
			Tension wires	3.2.5																
			Gates	2.1.2																
			Padlocks																	
			SD-08 Manufacturer's Instructions																	
			Fence	3.2																
		02822A	SD-01 Preconstruction Submittals																	
			Shop Drawings		G															
		02930	SD-01 Preconstruction Submittals																	
			Field Stockpiling Plants		G															

# SUBMITTAL REGISTER

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TITLE AND LOCATION			CONTRACTOR													
Northport Slope Stabilization																
(a)	(b)	(c)	(d)	(e)	(f)	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION	APPROVING AUTHORITY				(r)		
						(g)	(h)	(i)		(j)	(k)	(l)	(m)		(n)	(o)
TRANSMITTAL		SPESCT	DESCRIPTION ITEM SUBMITTED	PARRAG#	GOVT CLASS / AREA / WORK				ACCTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACCTION	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
	02930	Source of Supply														
		Layout Plan			G											
		Estimated Planting Schedule			G											
		SD-03 Product Data														
		Planting Materials			G											
		Plant Material Labelsc														
		Root control barrier														
		Metal edging														
		Metal anchors														
		Antidesiccants														
		SD-07 Certificates														
		Certificates of Inspection			G											
		Certification			G											
	03307A	SD-03 Product Data														
		Curing Materials		2.1.9	G											
		Reinforcing Steel		2.1.4	G											
		Batching and Mixing Equipment		3.1.5.3	G											
		Conveying and Placing Concrete		3.2												
		SD-06 Test Reports														
		Aggregates		2.1.2	G											
		Concrete Mixture Proportions		1.3.3	G											
		SD-07 Certificates														
		Cementitious Materials		2.1.1	G											
		Aggregates		2.1.2	G											
	05055A	SD-02 Shop Drawings														
		Detail Drawings		1.3	G											

## CONTRACTOR

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## CONTRACTOR

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## SECTION 01355A

## ENVIRONMENTAL PROTECTION

## PART 1      GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. AIR FORCE (USAF)

AFI 32-1053 Pest Management Program

## U.S. ARMY (DA)

AR 200-5 Pest Management

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 152 - 186	Pesticide Programs
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171 - 178	Hazardous Materials Regulations

## U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

WETLAND MANUAL Corps of Engineers Wetlands Delineation  
Manual Technical Report Y-87-1

## 1.2 DEFINITIONS

### 1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

### 1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

### 1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

### 1.2.4 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual that resides at a Civil Works Project office and that is responsible for oversight of pesticide application on Project grounds.

### 1.2.5 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

### 1.2.6 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

### 1.2.7 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that

adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

#### 1.2.8 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

#### 1.2.9 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

#### 1.2.10 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

### 1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

#### 1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

#### 1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

#### 1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

## Environmental Protection Plan; G

The Contractor shall submit an environmental protection plan within 15 days after receipt of the notice to proceed.

## 1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contract must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

## 1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

## 1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.
- c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- d. Description of the Contractor's environmental protection personnel training program.
- e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include a construction sequence, monitoring and reporting

requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations.

f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

i. Drawing showing the location of borrow areas.

j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer, the Northport/East Northport Fire Department (631) 261-0360 in addition to the legally required Federal, State and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. A non-hazardous solid waste disposal plan identifying methods and

locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of each Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological,

cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

g. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional specific requirements.

#### 1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

#### 1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

#### 1.9 SPECIAL ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with the special environmental requirements at the end of this section.

#### 1.10 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.



### 1.11 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

### 1.12 SPECIAL ENVIRONMENTAL PROTECTION REQUIREMENTS

#### 1.12.1 Biological Resources

The project lies within Essential Fish Habitat as designated by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The Contractor will be responsible for ensuring that consideration is given to prevent adverse impacts to the habitat and adhering to the guidelines (ie. erosion and sediment control installation and maintenance) stipulated within Section 01355 ENVIRONMENTAL PROTECTION and Section 01356A STORM WATER POLLUTION PREVENTION MEASURES. The Contractor shall be responsible for any violations of the stipulations as determined by the Contracting Officer or any other regulating agency.

#### 1.12.2 Tree Protection

Existing trees to be saved should be flagged and/or fenced to prevent damage during the construction period. No ropes, cables, or guys shall be fastened to or attached to any tree(s) for anchorage unless specifically authorized by the Contracting Officer. Where such special use is permitted, the Contractor shall provide effective protection to prevent damage to the tree and other land and vegetative resources. Unless specifically authorized by the Contracting Officer, no construction equipment or materials shall be placed or used within the drip line of trees shown on the drawings to be saved. No excavation or fill shall be permitted within the drip line of trees to be saved except as shown on the drawings.

#### 1.12.3 U.S. Department of Agriculture (USDA) Quarantined Considerations

The Contractor shall thoroughly clean all construction equipment at the prior job site in a manner that ensures all residual soil is removed and that egg deposits from plant pests are not present. The Contractor shall consult with the USDA Plant Protection and Quarantine (USDA - PPQ) jurisdictional office for additional cleaning requirements that may be necessary.

#### 1.12.4 Commercial Borrow

Prior to bringing commercially obtained borrow material onsite, the Contractor shall provide the Contracting Officer with the location of the pit or pits, the names of the owners and operators, and the types and estimated quantities of materials to be obtained from each source.

#### 1.12.5 Soil Disposal Areas on the Project Site

Soil disposal on project site shall be made only to the extent that they meet the requirements for materials as specified in the applicable sections of this specification. Hazardous, toxic, and radiological wastes (HTRW) shall not be disposed of on project site. Disposal operations shall be managed and controlled to prevent erosion of soil or sediment from entering nearby waters or wetlands. Disposal operations shall be developed and managed in accordance with the grading plan shown on the drawings or as approved by the Contracting Officer.

#### 1.12.6 Disposal of Solid Wastes

Solid waste is rubbish, debris, waste materials, garbage, and other discarded solid materials (excluding clearing debris and hazardous waste as defined in following paragraphs). Solid waste shall be placed in containers and disposed on a regular schedule. All handling and disposal shall be conducted in such a way as to prevent spillage and contamination. The Contractor shall transport all solid waste off the project site and dispose in compliance with Federal, State, and local requirements.

#### 1.12.7 Clearing Debris

Clearing debris is trees, tree stumps, tree trimmings, and shrubs, and leaves, vegetative matter, excavated natural materials (e.g., dirt, sand, and rock), and demolition products (e.g., brick, concrete, glass, and metals).

a. The Contractor shall collect trees, tree stumps, tree trimmings, shrubs, leaves, and other vegetative matter; and shall transport from project site for proper disposal in compliance with Federal, State, and local requirements. The Contractor shall segregate the matter where appropriate for proper disposal. Untreated and unpainted scrap lumber may be disposed of with this debris where appropriate.

b. Excavated natural materials which meet the requirements of the specific specification may be incorporated into the project. All other materials will be transported from the project site for proper disposal in compliance with Federal, State, and local requirements.

c. Demolition products shall be transported from the project site for proper disposal in compliance with Federal, State, and local requirements.

#### 1.12.8 Disposal of Contractor Generated Hazardous Wastes

Hazardous wastes are wastes as defined in 40 CFR 261, and as defined by applicable State and local regulations. Hazardous waste generated by construction activities shall be removed from the work area and be disposed in compliance with Federal, State, and local requirements. The Contractor shall segregate hazardous waste from other materials and wastes, and shall protect it from the weather by placing it in a safe covered location; precautionary measures against accidental spillage such as berming or other appropriate measures shall be taken. Hazardous waste shall be removed from the project site within 60 days. Hazardous waste shall not be dumped onto the ground, into storm sewers or open water courses, or into the sanitary sewer system.

#### 1.12.9 Fuels and Lubricants

Fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants and waste oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with Federal, State, and local laws and regulations.

#### 1.13 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

#### 1.14 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

### PART 2 PRODUCTS (NOT USED)

### PART 3 EXECUTION

#### 3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

This paragraph supplements the Contractor's responsibility under the contract clause "PERMITS AND RESPONSIBILITIES"

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

#### 3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by

the Contractor.

### 3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

### 3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

### 3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs), as indicated on the drawings, and as specified in Section 01356A STORM WATER POLLUTION PREVENTION MEASURES. BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins.

### 3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

## 3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

### 3.3.1 Sheet piling, Diversions, and Dewatering Operations

Construction operations for dewatering, installation and removal of sheet piling, and excavation and backfill shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses of the surface water body. The Contractor shall comply with the State of New York water quality standards and anti-degradation provisions.

### 3.3.2 Stream Crossings

Stream crossings shall allow movement of materials or equipment without violating water pollution control standards of the Federal, State, and local governments.

### 3.3.3 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

## 3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

### 3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

### 3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

### 3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of New Jersey rules.

#### 3.4.4 Burning

Burning shall be prohibited on the Government premises.

### 3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

#### 3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

#### 3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

#### 3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 and applicable State of New York regulations. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 10 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the

Contractor's responsibility.

If the Contractor has to dispose of Hazardous Wastes/Excess Hazardous Materials he/she will prepare and sign the Wastes Analysis/Wastes Profiles and Land Ban Restrictions, and in accordance with these documents shall prepare Manifest for signature of the Government. The individual preparing the documents shall be properly trained in the US EPA(RCRA) and US DOT regulations covering Hazardous Wastes Shipments. The Manifest shall include the name and telephone number of the Emergency Response point of contact per US DOT requirements. The Point of Contact shall be fully knowledgeable regarding the manifests and Hazardous Wastes/Excess Hazardous Materials and shall personally staff this telephone number at all hours, day and night during the period of shipping.

#### 3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations.

#### 3.5.5 Waste Water

Disposal of waste water shall be as specified below.

- a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water in accordance with all applicable State of New York regulations.
- b. For discharge of ground water, the Contractor shall surface discharge in accordance with all in accordance with all applicable State of New York regulations.
- c. Water generated from the flushing of lines after hydrostatic testing shall be discharged in accordance with all Federal, State, and local laws and regulations for land application.

#### 3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project.

#### 3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

- a. Construction and Demolition (C&D) Debris Disposed = \_\_\_\_\_ in cubic yards.
- b. Construction and Demolition (C&D) Debris Recycled = \_\_\_\_\_ in cubic yards.
- c. Total C&D Debris Generated = \_\_\_\_\_ in cubic yards.
- d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = \_\_\_\_\_ in cubic yards.

### 3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. The Contractor shall protect these resources and shall be responsible for their preservation during the life of the Contract. If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

### 3.9 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations. The project lies within Essential Fish Habitat as designated by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The Contractor will be responsible for ensuring that consideration is given to prevent adverse impacts to the habitat and adhering to the guidelines (ie. erosion and sediment control installation and maintenance) stipulated within Section 01355A ENVIRONMENTAL PROTECTION and Section 01356A STORMWATER POLLUTION PREVENTION MEASURES. The Contractor shall be responsible for any violations of the stipulations as determined by the Contracting Officer or any other regulation agency.

### 3.10 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.



### 3.11 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

### 3.12 MILITARY MUNITIONS

In the event the Contractor discovers or uncovers military munitions as defined in 40 CFR 260, the Contractor shall immediately stop work in that area and immediately inform the Contracting Officer.

### 3.13 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

### 3.14 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

## SECTION 01356A

## STORM WATER POLLUTION PREVENTION MEASURES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4439	(1997) Standard Terminology for Geosynthetics
ASTM D 4491	(1996) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996)) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1995) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(1995) Identification, Storage, and Handling of Geosynthetic Rolls

## 1.2 GENERAL

The Contractor shall implement the storm water pollution prevention measures specified in this section in a manner which will meet the requirements of Sections 02340 SOIL STABILIZATION, 02370A SOIL EROSION AND SEDIMENT CONTROL and 02378A GEOTEXTILES, Soil Erosion and Sediment Control permit, and the requirements of the National Pollution Discharge Elimination System (NPDES) permit referenced that Section.

## 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Mill Certificate or Affidavit; G

Certificate attesting that the Contractor has met all specified requirements.

#### 1.4 EROSION AND SEDIMENT CONTROLS

The controls and measures required by the Contractor are described below.

##### 1.4.1 Stabilization Practices

The stabilization practices to be implemented shall include temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control matts, protection of trees, preservation of mature vegetation, etc. On his daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

##### 1.4.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

##### 1.4.1.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

##### 1.4.2 Structural Practices

Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices. Location and details of installation and construction are shown on the drawings.

##### 1.4.2.1 Silt Fences

The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences shall be installed in the locations indicated on the drawings. Final removal of silt fence barriers shall be upon approval by the Contracting Officer.

##### 1.4.2.2 Straw Bales

The Contractor shall provide bales of straw as a temporary structural

practice to minimize erosion and sediment runoff. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, bales shall be placed as work progresses, bales shall be removed/replaced/relocated as needed for work to progress in the drainage area). Areas where straw bales are to be used are shown on the drawings. Final removal of straw bale barriers shall be upon approval by the Contracting Officer. Rows of bales of straw shall be provided as follows:

- a. Along the downhill perimeter edge of all areas disturbed.
- b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.
- c. Along the toe of all cut slopes and fill slopes of the construction areas.

## PART 2 PRODUCTS

### 2.1 COMPONENTS FOR SILT FENCES

#### 2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

#### FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

#### 2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

### 2.1.3 Mill Certificate or Affidavit

A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

### 2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

## 2.2 COMPONENTS FOR STRAW BALES

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor may use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 3 feet.

### 2.3 TURBIDITY CURTAINS

Turbidity curtains shall be constructed as shown on the Contract Drawings.

## PART 3 EXECUTION

### 3.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated approximately 6 inches wide and 6 inches deep on the upslope side of the location of the silt fence. The 6-inch by 6-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the Contracting Officer.

### 3.2 INSTALLATION OF STRAW BALES

Straw bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Straw bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), the excavated

soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Loose straw shall be scattered over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake or steel post in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or steel pickets shall be driven a minimum 18 inches deep into the ground to securely anchor the bales.

### 3.1 INSTALLATION OF TURBIDITY CURTAINS

Turbidity curtains shall be constructed and placed as shown on the Contract Drawings.

### 3.3 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

#### 3.3.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall receive erosion control if required by Sections 02340 SOIL STABILIZATION, 02370A SOIL EROSION AND SEDIMENT CONTROL and 02378A GEOTEXTILES. Sediment must be removed when accumulations reach  $\frac{1}{3}$  the height of the silt fence.

#### 3.3.2 Straw Bale Maintenance

Straw bale barriers shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged bales, end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. Bale rows used to retain sediment shall be turned uphill at each end of each row. When a straw bale barrier is no longer required, it shall be removed. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 02370A SOIL EROSION AND SEDIMENT CONTROL.

#### 3.3.3 Turbidity Curtain Maintenance

Turbidity curtains shall be inspected with paragraph INSPECTIONS. Any required repairs shall be made promptly. Should the fabric on the turbidity

curtain decompose or become ineffective, and the curtain is still necessary, the fabric shall be replaced promptly. Sediment must be removed when accumulations reach 1/3 of the height of the curtain and be stabilized away from the waterbody. When a turbidity curtain is no longer required, it shall be removed by carefully pulling it toward the construction site to minimize the release of attached sediment. Any floating construction or natural debris should be immediately removed to prevent damage to the curtain. If the curtain is oriented in a manner that faces the prevailing winds, frequent checks of the anchorage should be made.

### 3.4 INSPECTIONS

#### 3.4.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

#### 3.4.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

#### 3.4.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

## SECTION 01420

## SAFETY

## PART 1 SAFETY

The contractor shall comply with all applicable Federal, State, and local safety and occupational health laws and regulations. Applicable provisions of the Corps of Engineers manual entitled Safety and Health Requirements Manual EM 385-1-1, 3 Nov 2003 (with latest changes as of bid date) will be applied to all work under this contract. The referenced manual may be purchased from the U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328, or via the internet at .

1.1 U.S. ARMY CORPS OF ENGINEERS SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1

This paragraph applies to contracts and purchase orders that require the Contractor to comply with EM 385-1-1 (e.g. contracts that include the Accident Prevention Clause at FAR 52.236-13 and/or safety provisions). EM 385-1-1 and its changes are available at (at the HQ homepage, select Safety and Occupational Health and then select Changes to EM). The Contractor shall be responsible for complying with the current edition and all changes posted on the web as set in this solicitation.

## PART 2 ACCIDENT PREVENTION PROGRAM

Within fifteen (15) calendar days after receipt of Notice to Proceed, and at least ten (10) calendar days prior to the Preconstruction Safety Conference, four (4) copies of the Accident Prevention Plan shall be submitted for review and acceptance by the Contracting Officer or the Contracting Officers Representative (COR). The accident prevention program shall be prepared in the format outlined in Appendix A of EM 385-1-1, "Minimum Basic Requirements for Accident Prevention Plan".

## PART 3 HAZARD ANALYSIS

Prior to beginning each major phase of work, an Activity Hazard Analysis shall be prepared by the Contractor performing that work, and submitted for review and acceptance. The format shall be in accordance with EM 385-1-1, figure 1-2. A major phase of work is defined as an operation involving a type of work presenting hazards not experienced in previous operations or where a new contractor or work crew is to perform. (See Contractor Quality Control specification for further guidance regarding coordination of "Activities" and "Principal Steps" indicated in the Activity Hazard Analysis with Contractor Quality Control activities). The analysis shall define the activities to be performed and identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the activity hazard analysis has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the government on-site representative(s). The activity hazard analyses shall be continuously reviewed and when



appropriate modified to address changing site conditions or operations, with the concurrence of the site safety representative, the site superintendent, and the Contracting Officer. Activity hazard analyses shall be attached to and become part of the accident prevention plan or may be developed prior to each phase of work undertaken in the contract and attached to the Quality Control reports.

### 3.1 Control Measures

Hazard analysis shall be used to identify and evaluate all substances, agents, or environments that present hazards and recommend control measures. Engineering and administrative controls shall be used to control hazards; in cases where engineering or administrative controls are not feasible, personal protective equipment may be used.

### 3.2 MSDS

Information contained in MSDS (Material Safety Data Sheets) shall be incorporated in the hazard analysis for the activities in which hazardous or toxic materials will be used, or generated (e.g. fiberglass, crystalline silica, metal dust or fume, etc.).

## PART 4 SITE SAFETY OFFICER

The contractor shall identify an individual directly employed by the contractor as Site Safety Officer (SSO) responsible to the Contractor to implement and continually enforce the Accident Prevention Plan. The site safety officer shall not be the same individual as the Quality Control System Manager if the CQC System Manager is required to have no duties other than Quality Control. The site safety officer shall have the authority to suspend operational activities if the health and safety of personnel are endangered, and to suspend an individual from operational activities for infractions of the Accident Prevention Plan. Additional safety staff or alternate SSO may be assigned as determined by the Contractor. Alternate SSO must meet the same qualifications as the SSO.

### 4.1 Qualifications

The name, qualifications (training and experience) of the designated Site Safety Officer shall be included in the Accident Prevention Plan. The Site safety officer shall have the following qualifications:

- a. A minimum of 5 years construction experience with at least 2 years experience in implementing safety programs at construction work sites for projects of comparable scope and complexity.
- b. Documented experience in construction techniques and construction safety procedures.
- c. Working knowledge of Federal and state occupational health and safety regulations.
- d. Specific training in excavation safety, fall protection, and confined space.
- e. CPR/First Aid certification (current)
- f. Familiarity with and ability to use and implement the Corps of Engineers Safety Manual EM 385-1-1.

- g. Successful completion within last 5 years (or as required by OSHA) of 10-hour OSHA Construction Safety Class

#### 4.2 Other Requirements

Other sections of the contract documents may also require separate specially qualified individuals in such areas as chemical data acquisition, sampling and analysis, medical monitoring, industrial hygiene, quality control, etc. Contractor must comply with all safety requirements.

### PART 5 SITE INSPECTIONS

The site safety officer shall perform frequent inspections of the job sites and the work in progress to ensure compliance with EM 385-1-1 and to determine the effectiveness of the accident prevention plan. In addition, Quality Control personnel shall conduct and document daily safety inspections. Daily inspection logs shall be used to document inspections noting safety and health deficiencies, deficiencies in the effectiveness of the accident prevention plan, and corrective actions including timetable and responsibilities. The daily inspection logs will be attached to and submitted with the Daily Quality Control Reports or may be incorporated in the daily QQC report. Each entry shall include date, work area checked, employees present in work area, protective equipment and work equipment in use, special safety and health issues and notes, and signature of the preparer.

### PART 6 HIGHLIGHTED PROVISIONS

In addition to those items contained in EM 385-1-1, Appendix A, include the following items in the accident prevention plan:

#### 6.1 Hard Hat Area

A statement that the jobsite is classified a "hard hat" area from start to finish.

#### 6.2 Sanitation and Medical Requirements

Estimate the greatest number of employees, supervisors, etc., to be working at peak construction period, including subcontractor personnel. Include sanitation requirements and medical facilities identified for the job site. If a medical facility or physician is not accessible within five minutes of an injury to a group of two or more employees for the treatment of injuries, identify at least two or more employees on each shift who are qualified to administer first aid and CPR.

#### 6.3 Equipment Inspection

The type of inspection program on cranes, trucks, and other types of construction equipment the Contractor plans to implement. Who will be responsible for the inspection and how the Contractor will control equipment of sub-contractors and equipment bought to the site by rental companies. Types of records to be kept.

##### 6.3.1 Records

Copies of records of all equipment inspections will be kept at the job site for review by the designated authority.

#### 6.4 Crane & Derrick Operators

Written proof of qualification for all crane and derrick operators in accordance with EM 385-1-1, 16.C.05. Qualification shall be by written (or oral) examination and practical operating examination unless the operator is licensed by a state or city licensing agency for the particular type of crane or derrick. Proof of qualification shall be provided by the qualifying source.

### PART 7 ACCIDENT REPORTS

The contractor shall immediately report all accidents by telephone to the COR.

#### 7.1 Initial Report

The Contractor will provide an initial written report of the accident to the COR within 24 hours. The Contractor shall complete and submit ENG Form 3394 for all accidents involving lost work time, medical treatment, and/or property damage in excess of \$2000.00 within 48 hours of the accident. The report shall accurately represent the circumstances of the accident, cause of the accident, extent of medical treatment, extent of injuries and steps to prevent occurrence of similar accidents. The hazard analysis covering the work activity being undertaken during the accident shall be attached to the report.

#### 7.2 First Aid Records

Daily records of all first aid treatment not otherwise reportable shall be maintained at the job site and furnished to the designated authority upon request. Records shall also be maintained of all exposure and accident experience incidental to the work (OSHA Form 300 or equivalent as prescribed by 29 CFR 1904).

### PART 8 MONTHLY EXPOSURE REPORTS

The Contractor shall submit to the COR no later than the 1st day of each month, a compilation of manhours worked each month by the prime contractor and each subcontractor. In addition, the contractor shall report the number of accidents, severity, class of accidents, and lost time work days for each month.

### PART 9 CLEAN-UP

The Contractor's Accident Prevention Plan shall identify the individual's responsible for cleanup and shall establish a regular housekeeping procedure and schedule. If the COR determines that cleanup is not being performed satisfactorily, the Contractor shall establish a work crew to perform the continuous cleanup required by the contract clause titled: CLEANING UP: The number of individuals appointed to the cleanup work crew shall be increased as required in order to render adequate cleanup.

### PART 10 FOCUS AREAS

To supplement and emphasize the requirements of EM 385-1-1, the following is provided and shall be met as applicable.

## 10.1 Electrical Work

Electrical work shall not be performed on or near energized lines or equipment unless specified in the plans and specifications and approved by the COR. Plan and layout of proposed temporary power to the construction site shall be submitted and approved by the COR before work will be permitted.

### 10.1.1 De-Energizing Lines

Upon request by the Contractor, arrangements will be made for de-energizing lines and equipment so that work may be performed. All outages shall be requested through the COR a minimum of 14 days, unless otherwise specified, prior to the beginning of the specified outages. Dates and duration will be specified.

## 10.2 Allowable Work on Energized Lines

If approved by the COR, the following work may be performed with the lines energized using certified hot line equipment on lines above 600 volts, when the following conditions have been met:

- a. Work below the conductors no closer than the clearance required in EM 385-1-1 from the energized conductors.
- b. Setting and connection of new pre-trimmed poles in energized lines which do not replace an existing pole.
- c. Setting and removing transformers or other equipment on poles.
- d. Installation or removal of hot line connectors, jumpers, dead-end insulators for temporary isolation, etc., which are accomplished with hot line equipment from an insulated bucket truck.

## 10.3 Energized Line Work Plan

The Contractor shall submit a plan, in writing, describing his/her method of operation and the equipment to be used on energized lines. Proper certification from an approved source of the safe condition of all tools and equipment will be provided with the plan. The work will be planned and scheduled so that proper supervision is maintained. Emergency procedures, including communication, for disconnecting power in the event of an accident will be outlined in the plan. The Contractor will review his/her plan with the COR prior to being granted permission to perform the work.

## 10.4 600 Volt Lines

No work on lines greater than 600 volts will be performed from the pole or without the use of an insulated bucket truck.

## 10.5 Energized Underbuilt Lines

No work will be done on overbuilt lines while underbuilt lines are energized, except for temporary isolation and switching.

## 10.6 Electrical Tools and Cords

Hand held electrical tools shall be used only on circuits protected by ground fault circuit interrupters for protection of personnel. All general

use extension cords shall be hard usage or extra hard usage as specified in Table 11-1 of EM 385-1-1. Damaged or repaired cords shall not be permitted.

#### 10.7 Temporary Power

Temporary electrical distribution systems and devices shall be checked and found acceptable for polarity, ground continuity, and ground resistance before initial use and after modification. GFI outlets shall be installed and tested with a GFI circuit tester (tripping device) prior to use. Portable and vehicle mounted generators shall be inspected for compliance with EM 385-1-1 and NFPA 70. All electrical equipment located outdoors or in wet locations shall be enclosed in weatherproof enclosures in accordance with EM 385-1-1. Records of all tests and inspections will be kept by the contractor and made available on site for review by the designated authority. Submit sketch of proposed temporary power for acceptance.

#### 10.8 Rollover Protective Structures (ROPS)

Seat belts and ROPS shall be installed on all construction equipment as required by paragraph 16.B.12 of EM 385-1-1. The operating authority will furnish proof from the manufacturer or licensed engineer that ROPS meets the applicable SAE standards cited in EM 385-1-1, pg. 302.

#### 10.9 Radiation Permits or Authorizations

Contractors contemplating the use of a licensed or DOD regulated radiological device or radioactive material on a DOD installation will secure appropriate permit or authorization from the Department of Army or Department of the Air Force, as applicable. A 45-day lead-time should be programmed for obtaining the necessary authorization or permit. When requested, the COR will assist the Contractor in obtaining the required permit or authorization.

##### 10.9.1 Radiation Safety Program

The Contractor shall develop and implement a radiation safety program to comply with EM 385-1-1, Section 06.E. Provisions for leak tests, authorized personnel, transport certificates, etc. will be addressed in the radiation safety program.

#### 10.10 Elevating Work Platforms

All elevating work platforms shall be designed, constructed, maintained, used, and operated in accordance with ANSI A92.3, ANSI A92.6, ANSI A92.5 and EM 385-1-1, Sections 22.J.

##### 10.10.1 Elevating Work Personnel

Only personnel trained in the use of elevating work platforms shall be authorized to use them. A list of authorized users will be maintained by the contractor at the job site. The list will be updated to remain current and made available for review on site by the designated authority. Personnel safety belts must be worn.

#### 10.11 Fall Protection

Fall protection in the form of standard guardrails, nets, or personal fall arrest systems will be provided for all work conducted at 6 feet or more in height. The contractor will submit his/her proposed method of fall

protection to the COR as part of the Job Hazard Analysis for acceptance. The Contractor will prepare a written fall protection plan in accordance with OSHA 29 CFR 1926.502(k). The plan will demonstrate the reasons that conventional fall protection is unfeasible or constitutes a greater hazard and will provide alternative safety measures for review and acceptance by the COR.

#### 10.12 Excavations

All open excavations made in the earth's surface four (4) foot or greater will be under the supervision of a competent person trained in, and knowledgeable about, soils analysis, the use of protective systems, and the requirements of OSHA 29 CFR 1926, Subpart P and EM 385-1-1, Section 25. The competent person shall be designated in writing by the Contractor and a resume of their training and experience submitted to the COR for acceptance.

##### 10.12.1 Hazards and Methods of Control

Excavations hazards and methods for their control will be specified in the job hazard analysis.

##### 10.12.2 Sloping and Benching

The design of sloping and benching shall be selected from and in accordance with written tabulated data, such as charts and tables. At least one copy of the tabulated data will be maintained at the job site.

##### 10.12.3 Support Systems

Shall be in accordance with one of the systems outlined in a through c below:

- a. Designs drawn from manufacturer's specifications and in accordance with all specifications, limitations, and recommendations issued or made by the manufacturer. A copy of the manufacture's specifications, recommendations, and limitations will be in written form and maintained at the job site.
- b. Designs selected from and in accordance with tabulated data (such as tables and charts). At least one copy of the design shall be maintained at the job site during excavation.
- c. Designed by a registered engineer. At least one copy of the design shall be maintained at the job site during excavation.

##### 10.12.4 Excavations Greater Than 20 Feet in Height

Sloping and benching or support systems shall be designed by a registered professional engineer. Designs shall be in writing and at least one copy of the design shall be maintained at the job site during excavation. The contractor will ensure that the registered professional engineer is working within a discipline applicable to the excavation work; i.e. it would be inappropriate for an electrical engineer to approve shoring designed for an excavation.

#### 10.13 Confined Space

Entry into and work in a confined space will not be allowed when oxygen

readings are less than 19.5% or greater than 23.5% or if the lower explosive limit (LEL) reading is greater than 10%, unless these conditions are adequately addressed in the confined space entry plan. In addition, action levels for toxic atmospheres shall be determined and any other known or potential hazards eliminated prior to entry.

#### PART 11 LANGUAGE

For each group that has employees that do not speak English, the Contractor will provide a bilingual foreman that is fluent in the language of the workers. The contractor will implement the requirements of EM 385-1-1, 01.B through these foremen.

#### PART 12 CONTRACTOR SAFETY MEETINGS AND DOCUMENTATION

Contractor shall conduct and document safety meetings among its personnel as required by EM 385-1-1 and as indicated herein. Monthly meetings shall be held among all supervisors, and weekly meetings shall be conducted by supervisors or foreman for all workers. The agenda of the meeting shall include specific safety items pertinent to work being performed. Documentation shall include a summary of items discussed as well as other items required by the EM 385-1-1. Documentation shall be submitted to the Government monthly.

#### PART 13 COORDINATION WITH OTHER SPECIFICATION SECTIONS

The requirements of this section are meant to supplement requirements of other sections. In cases of discrepancies the most stringent requirements shall apply. Other safety-related requirements can be found in the following specification sections:

- a. Specification Section 00800, Special Contract Requirements
- b. Specification Section 00700, Contract Clauses, paragraph entitled "accident Prevention"
- c. Specification Section entitled "Contractor Quality Control"
- d. Other specifications or contract requirements relating to site safety or health requirement or medical monitoring.

#### PART 14 CONTRACTOR PERFORMANCE APPRAISAL

The occurrence of accidents and near misses due to negligence are strong indications that there has been insufficient emphasis on effective implementation and/or commitment to the accident prevention program. Should it become obvious that only lip service is being given to this program, an interim unsatisfactory performance appraisal rating will be issued. If safety continues to be unsatisfactory or marginal, the unsatisfactory rating will become final. The contractor should be aware that this appraisal will be stored in a national computer database which can be accessed by a multitude of agencies or municipalities desiring information on prospective contractors. An unsatisfactory rating in this database may affect the contractor's ability to obtain future Government work.

-- End of Section --

## SECTION 01451A

## CONTRACTOR QUALITY CONTROL

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM D 3740 (2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

ASTM E 329 (2002) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

## U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-1-12 (1993) Quality Management

## PART 2 PRODUCTS (Not Applicable)

## PART 3 EXECUTION

## 3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

## 3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel,



procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

### 3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.
- e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.
- h. Reporting procedures, including proposed reporting formats.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks,

has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

### 3.2.2 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

### 3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

## 3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 14 calendar days prior to the Coordination Meeting.

During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

## 3.4 QUALITY CONTROL ORGANIZATION

### 3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization.

Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

#### 3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a graduate of construction management, with a minimum of 2 years construction experience on construction similar to this contract or a construction person with a minimum of 4 years in related work. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control.

#### 3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: electrical, mechanical, civil, structural, environmental, architectural, materials technician, submittals clerk, occupied family housing coordinator. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan.

#### Experience Matrix

	Area	Qualifications
a.	Civil	Graduate Civil Engineer with 2 years experience in the type of work being performed on this project or technician with 5 yrs related experience
b.	Mechanical	Graduate Mechanical Engineer with 2 yrs experience or person with 5 yrs related experience
c.	Electrical	Graduate Electrical Engineer with 2 yrs related experience or person with 5 yrs related experience
d.	Structural	Graduate Structural Engineer with 2 yrs

## Experience Matrix

	Area	Qualifications
		experience or person with 5 yrs related experience
e.	Architectural	Graduate Architect with 2 yrs experience or person with 5 yrs related experience
f.	Environmental	Graduate Environmental Engineer with 3 yrs experience
g.	Submittals	Submittal Clerk with 1 yr experience
h.	Occupied family housing	Person, customer relations type, coordinator experience
i.	Concrete, Pavements and Soils	Materials Technician with 2 yrs experience for the appropriate area
j.	Testing, Adjusting and Balancing (TAB) Personnel	Specialist must be a member of AABC or an experienced technician of the firm certified by the NEBB.
k.	Design Quality Control Manager	Registered Architect or Professional Engineer

## 3.4.4 Additional Requirement

In addition to the above experience and education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors".

## 3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

## 3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

## 3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable

feature of the construction work as follows:

### 3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. Review of provisions that have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 72 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

### 3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of

work. The following shall be accomplished:

- a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 72 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

### 3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

### 3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

## 3.7 TESTS

### 3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing

laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

### 3.7.2 Testing Laboratories

#### 3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

#### 3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

#### 3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

#### 3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers Division Laboratory, f.o.b., at the address established at the preconstruction meeting upon award of the bid.

Coordination for each specific test, exact delivery location, and dates will be made through the Area Office.

### 3.8 COMPLETION INSPECTION

#### 3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

#### 3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

#### 3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

### 3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed.



These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

- a. Contractor/subcontractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Offsite surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 48 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

### 3.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or

refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

# RECORD OF PREPARATORY AND INITIAL INSPECTIONS

DATE OF INSP	TYPE OF INSP	DEFINABLE FEATURE OF WORK (DESCRIBE)	REPORT NOS		PERSONS ATTENDING INSP	WAS MATL&/OR EQUIPMENT PHYSICALLY INSPECTED ?
			QA	QC		
NAD FORM 826 22 JULY 86			NOTE: THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK PREP/INIT INSP'S ATTACH ADDITIONAL RESULTS OR COMMENTS AS REQUIRED			

# LIST OF OUTSTANDING DEFICIENCIES

DATE: \_\_\_\_\_

OF \_\_\_\_\_

SH \_\_\_\_\_

PROJECT TITLE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

LOCATION: \_\_\_\_\_

CQC REPORT# \_\_\_\_\_

CONTRACT #:

SPEC REF OR DWG#	LOCATION ON PROJECT	DESCRIPTION OF DEFICIENCY	DATE FOUND	DATE TO BE CORRECTED	DATE CORRECTED	REMARKS

NOTE: THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK OUTSTANDING CONSTRUCTION DEFICIENCIES

# CQC TEST REPORT LIST

CQC REPORT# \_\_\_\_\_ SH \_\_\_\_\_ OF \_\_\_\_\_ DATE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_ CONTRACT #: \_\_\_\_\_

PROJECT TITLE: \_\_\_\_\_ LOCATION: \_\_\_\_\_

SPEC REF OR DWG#	TYPE OF TEST	DATE PERFORMED	RESULTS	REMARKS

NOTE: THIS FORM SHALL BE USED BY THE CONTRACTOR TO TRACK CQC TESTING. PROVIDE ATTACHMENTS AS REQUIRED.

1. Project Title: \_\_\_\_\_

Location: \_\_\_\_\_ Contract No.: \_\_\_\_\_

2. List Contractors and Subs Working This Day and Areas of responsibility of each

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3. Weather:

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4. Description and Location of Work of the Project (Also indicate days of no work and reasons for delay)

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5. Labor and Equipment Breakdown by Trade (Attach Continuation)

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6. Preparatory Phase Inspections Held (See Attached Minutes)

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7. Initial Phase Inspections Held (See attached minutes)

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## 8. Follow-Up Phase Inspections Performed, Results and Corrective Actions Taken

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**9. Job Safety. Indicate What Was Checked, Results, Instructions Received and Corrective Actions:**

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## 10. Additional Activities and Remarks (Check Appropriate Box)

- |  |   |
|--|---|
| <input type="checkbox"/> a. Testing Performed. Attach Results. | <input type="checkbox"/> d. Outstanding Deficiencies. See Attached List |
| <input type="checkbox"/> b. Verbal Instructions Received.      | <input type="checkbox"/> e. Delivery of Equipment and Materials.        |
| <input type="checkbox"/> c. Submittal Actions.                 | <input type="checkbox"/> f. Misc/Remarks.                               |

(Use Space Below To Discribe Checked Items)

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

11. Contractor's Verification: "The above report and attachments are complete and all supplies, Materials, Equipment and Workmanship incorporated into the work are in full compliance with the contract except as noted".

Signed \_\_\_\_\_ Date \_\_\_\_\_  
CQC Representative

CENAN-CO 5/99

## SECTION 01453

## CONTRACTOR WARRANTY MANAGEMENT

## PART 1 GENERAL

## 1.1 REFERENCES

- a. Clause "Warranty of Construction", (FAR 52.246-0021)
- b. Clause "Inspection of Construction" (FAR 52.246-12)
- c. Special Requirement paragraph entitled "Record Drawings"
- d. Specification Section entitled "Contractor Quality Control"

## 1.2 GENERAL

In order to insure that the Government systematically receives all warranties of construction, equipment and systems to which it is entitled, the contractor shall execute all actions as required by above references and as contained herein.

## 1.3 POST-COMPLETION INSPECTIONS

For purposes of management of construction warranties, the Government conducts four and nine month warranty inspections with using agencies. The Contractor is encouraged to attend these inspections in order to better manage any warranty items for which it may be responsible.

## 1.4 TAGGING OF EXTENDED WARRANTY ITEMS

The Contractor shall install tags to identify items protected by extended warranty, i.e. longer than the one year general warranty of construction. The tags shall be minimum 3 inches by 5 inches in size, machine-printed in minimum 14-point type, and shall be weatherproof. Tags shall be attached to equipment if accessible or to accessible control panel, etc. As a minimum, tags shall indicate the following information:

"Extended Warranty Item:"

- Name of Item
- Name of System with which associated, number designation within system, or other identifier
- Model Number
- Serial Number
- Start and end Dates of Warranty
- Contract number
- Contract Name
- Contractor Name
- Point of Contact name, organization and telephone number.

## 1.5 POSTING OF INSTRUCTIONS

In addition to any posting of operating procedures as may be required elsewhere in this contract, any equipment or system for which proper operation or maintenance is critical in order to preserve warranties,



prevent damage, or for reasons of safety shall have proper operating procedures posted near the equipment or near the operating point. Instructions shall be protected by 1/16 inch thick plastic sheet.

#### 1.6 WARRANTY MEETING

At least 14 days prior to the 80% completion point of this contract (or deliverable phase thereof ), the contractor will notify the Government representative for the purpose of scheduling a meeting to clarify understandings of responsibilities with respect to warranties to which the Government is entitled. The Government and contractor shall attend the warranty meeting, as well as any subcontractors, or suppliers involved in the warranty process. The Warranty Plan (below) shall have already been submitted and approved by the Government before the warranty meeting can take place, and shall be the basis of the meeting's agenda.

#### 1.7 WARRANTY PLAN

At least 30 days before the planned warranty meeting, the contractor shall submit a warranty plan for Government approval per section "Submittals". The Warranty Plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled.

The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. As a minimum the plan shall indicate:

- a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the contractor's, subcontractors or suppliers involved.
- b. Listing and status of O&M manuals and As-built drawings, and expected delivery dates.
- c. Listing and status of all training to be provided to Government personnel, whether specified by contract or required by manufacturers.
- d. Listing and status of delivery of all Certificates of Warranty for extended warranty items.
- e. A list for each warranted equipment, item, feature of construction or system indicating:

- Name of item
- Model and serial numbers.
- Location where installed
- Names of manufacturers or, suppliers and phone numbers.
- Names addresses and telephone numbers of sources of spare parts
- Warranties and terms of warranty. This shall include one-year overall warranty of construction as required by ref. 1.a. Clearly indicate which items have extended warranties.
- Cross-reference to warranty certificates as applicable
- Starting point and duration of warranty period.
- Summary of maintenance procedures required to continue the warranty in force.
- Cross-reference to specific pertinent Operation and Maintenance

manuals

Organization, names and phone numbers of persons to call for warranty service

Typical response time and repair time expected for various warranted equipment

f. The contractor's plans for attendance at the Four and Nine month post-construction warranty inspections conducted by the Government.

g. Procedure and status of tagging of all equipment covered by extended warranties.

h. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons

-- End of Section --

## SECTION 01501

## PROTECTION AND MAINTENANCE OF TRAFFIC

## PART 1 GENERAL

## 1.1 PROTECTION AND MAINTENANCE OF TRAFFIC

## 1.1.1 General Requirements

During construction the Contractor shall maintain the existing right-of-way for roads and intersecting access roads. The Contractor shall maintain and protect traffic on existing adjacent roadways until the completion of the work. The Contractor shall be responsible for all measures for the protection and diversion of traffic, including the provision of watchman and flag men, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by state and local authorities having jurisdiction. Traffic will be maintained continuously for the duration of the contract and the travelling public shall be protected from all damage to persons and property.

## 1.1.2 Site Access

The Contractor shall use Beach Avenue, Scudder Park area, for construction staging and access to the work area as shown on the construction plans. The Scudder Park Boat Landing shall be used for transporting materials to and from the work area. In addition, Woodbine Avenue should be used to access the work area where required.

## 1.1.3 Maintenance of Traffic

Traffic shall be maintained continuously on all roads during the construction period and shall be in accordance with the construction plans, except as otherwise specifically directed by the Contracting Officer and the local authorities having jurisdiction.

-- End of Section --

## SECTION 01502

## DEWATERING

## PART 1 GENERAL

## 1.1 GENERAL REQUIREMENTS

## 1.1.1 Permanent Work

All permanent work shall be carried on in areas free from water. The Contractor shall design, construct and maintain all necessary temporary cofferdams and other protective measures, shall make provisions for diversion of the stream, shall furnish and place all materials therefore, and shall furnish, install, maintain and operate all necessary diversion channels, pumping plants bypass piping and other equipment for dewatering the various parts of the work. The Contractor shall be solely responsible for the safety of the work. All temporary protective works shall be removed before acceptance for the work under this Construction Contract.

## PART 2 PROTECTIVE MEASURES

## 2.1 CONTRACTOR PROPOSAL

The Contractor shall prepare methods and designs that generally describe protective measures which he proposes. This shall be submitted to the Contracting Officer for approval prior to execution. The design shall be sensitive to the needs of environmental protection and the requirements for soil erosion and sedimentation control. However, the approval of the Contracting Officer shall not relieve the Contractor from full responsibility for the adequacy of the protective measures. Any damage to any part of the work shall be repaired as stipulated in the Special Contract Requirements and Contract Clauses.

-- End of Section --

## SECTION 02218

## MONITORING OF EXISTING STRUCTURES

## PART 1 GENERAL

## 1.1 SUMMARY

The work covered by this section consists of furnishing all labor, materials, and equipment for performing all operations required to monitor existing structures.

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

## Qualifications of Surveyor; G

Qualifications, with verification of experience and license number, of a Licensed Surveyor, registered in the State of New York, with at least 10 years current experience in the monitoring of structures. Included in this submission shall be a listing, description, and references with phone numbers, of the current structural monitoring projects by this Surveyor.

## Monitoring Existing Structures for Movement; G

A comprehensive plan for monitoring of structures within 100 feet of the bulkhead installation including, but not limited to, the type of monitoring equipment to be used, the methods for measuring movement, and the frequency and schedule for taking readings shall be prepared and submitted by the Licensed Surveyor, specified above. The equipment shall have an ability to measure to 0.01 foot accuracy. An assessment of the existing structures within 100 feet of the new bulkhead will be made to determine if seismographs or other vibration monitoring equipment will be required due to pile driving of the sheet piling. If seismographs are needed, a plan will be submitted to include the number and locations of the seismographs within the contract area.

## Monitoring of Existing Structures

Through still and video photography, the conditions of all structures within 100 feet of the bulkhead installation shall be documented before the start of the contract work. After the completion of the contract work, the Contractor shall again document the conditions of these structures through still photography and videography. These photos and videos shall be, at a minimum, obtained at those locations where the initial

documentation was made.

PART 2 PRODUCTS

(NOT APPLICABLE)

PART 3 EXECUTION

3.1 MONITORING FOR MOVEMENT

The Contractor's Licensed Surveyor shall monitor existing structures for any type of movement during construction. The Surveyor shall be licensed and qualified as specified in paragraph SUBMITTALS, above. Survey points shall be installed on the structures. Coordinates and elevations of those points shall be established for those structures. The monitoring shall be done using approved monitoring devices during construction. The log of readings taken shall be provided daily with the Quality Control Report. The structures shall be monitored until the new bulkhead is backfilled and grading is completed.

-- End of Section --

## SECTION 02221

## EXCAVATION, FILLING AND BACKFILLING FOR STRUCTURES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1556	(1990) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2216	(1992) Laboratory Determination of Water (Moisture) Content of Soil, and Rock
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1991) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 2937	(1994) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 3017	(1988; R 1993) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

## 1.2 DEFINITIONS

## 1.2.1 Degree of Compaction

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated hereinafter as percent laboratory maximum density.

## 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports  
Field Density Tests; G  
Testing of Backfill Materials; G

Copies of all laboratory and field test reports within 24 hours of the completion of the test.

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Satisfactory Materials

Satisfactory materials include materials classified in ASTM D 2487 as GW, GP, SW, SP, SM, and GM and shall be free of trash, debris, roots or other organic matter, or stones larger than 3 inches in any dimension.

#### 2.1.2 Unsatisfactory Materials

Unsatisfactory materials include materials classified in ASTM D 2487 as Pt, OH, OL, MH, and CH and any other materials not defined as satisfactory.

#### 2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

#### 2.1.4 Embankment Fill

The embankment fill shall consist of two layers; a subsoil and topsoil. The subsoil shall be used as embankment fill up to final elevation minus one. Topsoil shall be used for the final foot of elevation to bring the slope up the grade identified for geoweb placement.

The subsoil shall consist of a well graded mixture of gravel, sand, and silt with a maximum particle size of 4 inches and shall have the following gradation:

Sieve Size	% Passing
3/8 inch	80 to 100
#30	30-85
#200	15-35

The topsoil shall be a loam, sandy loam, sandy clay loam or loamy sand. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash or any materials larger than 1.5 inches in diameter.

## PART 3 EXECUTION

### 3.1 CLEARING AND GRUBBING

Clearing and grubbing is specified in Section 02231 CLEARING AND GRUBBING. Materials removed shall be disposed of outside the limits of Government-controlled property at the Contractor's responsibility.



### 3.2 TOPSOIL

Where indicated or directed, topsoil shall be stripped to a depth of 12 inches. Topsoil shall be spread on areas already graded and prepared for topsoil, or transported and deposited in stockpiles convenient to areas that are to receive application of the topsoil later, or at locations indicated or specified. Topsoil shall be kept separate from other excavated materials, brush, litter, objectionable weeds, roots, stones larger than 2 inches in diameter, and other materials that would interfere with planting and maintenance operations. Any surplus of topsoil from excavations and grading shall be removed from the site.

### 3.3 PLACING TOPSOIL

On areas to receive topsoil, the compacted subgrade soil shall be scarified to a 2 inch depth for bonding of topsoil with subsoil. Topsoil then shall be spread evenly to a thickness of 6 inches and graded to the elevations and slopes shown in the limits of the contract drawings. Topsoil shall not be spread when frozen or excessively wet or dry. Material required for topsoil in excess of that produced by excavation within the grading limits shall be obtained from offsite areas.

### 3.4 EXCAVATION

Excavation limits shall conform to the dimensions and elevations indicated for each structure, and footing as indicated on the drawings except as specified hereinafter, and shall include trenching for utility and foundation drainage systems to a point 5 feet beyond the line of each structure, excavation for outside and all work incidental thereto. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. Excavations below indicated depths will not be permitted except to remove unsatisfactory material. Unsatisfactory material encountered below the grades shown shall be removed as directed and replaced with satisfactory material. Payment therefor will be made in conformance with the CHANGES clause of the CONTRACT CLAUSES. Satisfactory material removed below the depths indicated without specific direction of the Contracting Officer shall be replaced at no additional cost to the Government to the indicated excavation grade with satisfactory materials, except that concrete footings shall be increased in thickness to the bottom of the overdepth excavations and over-break in rock excavation. Satisfactory material shall be placed and compacted as specified in paragraph FILLING AND BACKFILLING. Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Contracting Officer.

### 3.5 DRAINAGE AND DEWATERING

#### 3.5.1 Drainage

Surface water shall be directed away from excavation and construction sites so as to prevent erosion and undermining of foundations. Diversion ditches, dikes and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting operations at the site shall be continually and effectively drained.

### 3.5.2 Dewatering

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in situ material. While the excavation is open, the water level shall be maintained continuously, at least 2 feet below the working level.

### 3.6 SHORING

Shoring, including sheet piling, shall be furnished and installed as necessary to protect workmen, banks, adjacent paving, structures, and utilities. Shoring, bracing, and sheeting shall be removed as excavations are backfilled, in a manner to prevent caving.

### 3.7 CLASSIFICATION OF EXCAVATION

Excavation will be unclassified regardless of the nature of material encountered.

### 3.8 BLASTING

Blasting will not be permitted.

### 3.9 EXCAVATED MATERIALS

Satisfactory excavated material required for fill or backfill shall be placed in the proper section of the permanent work required under this section or shall be separately stockpiled if it cannot be readily placed. Material which are unsuitable as foundation or embankment material, in the opinion of the Contracting Officer, will be ordered wasted and shall be disposed of at an approved disposal site, in accordance with all federal, state and local regulations.

### 3.10 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Excavation to final grade shall not be made until just before concrete is to be placed.

### 3.11 SUBGRADE PREPARATION

Unsatisfactory material in surfaces to receive fill or in excavated areas shall be removed and replaced with satisfactory materials. The surface shall be scarified to a depth of 6 inches before the fill is started. Sloped surfaces steeper than 1 vertical to 4 horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When subgrades are less than the specified density, the ground surface shall be broken up to a minimum depth of 6 inches, pulverized, and compacted to the specified density. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for the adjacent fill. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. Compaction shall be accomplished by sheepfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Material shall be moistened or aerated as necessary to plus or minus 3 percent of optimum moisture. Minimum subgrade density shall be as specified in

paragraph 3.1.3 FILLING AND BACKFILLING.

### 3.12 FILLING AND BACKFILLING

Satisfactory materials shall be used in bringing fills and backfills to the lines and grades indicated and for replacing unsatisfactory materials. Satisfactory materials shall be placed in horizontal layers not exceeding 6 inches in loose thickness. After placing, each layer shall be plowed, disked, or otherwise broken up, moistened or aerated as necessary, thoroughly mixed and compacted as specified. Backfilling shall not begin until construction below finish grade has been approved, underground utilities systems have been inspected, tested and approved, forms removed, and the excavation cleaned of trash and debris. Backfill shall be brought to indicated finish grade. Backfill shall not be placed in wet or frozen areas. Where pipe is coated or wrapped for protection against corrosion, the backfill material up to an elevation 2 feet above sewer lines and 1 foot above other utility lines shall be free from stones larger than 1 inch in any dimension. Heavy equipment for spreading and compacting backfill shall not be operated closer to foundation or retaining walls than a distance equal to the height of backfill above the top of footing; the area remaining shall be compacted in layers not more than 4 inches in compacted thickness with power-driven hand tampers suitable for the material being compacted. Backfill shall be placed carefully around pipes or tanks to avoid damage to coatings, wrappings, or tanks. Backfill shall not be placed against foundation walls prior to 7 days after completion of the walls. As far as practicable, backfill shall be brought up evenly on each side of the wall and sloped to drain away from the wall. Each layer of fill and backfill shall be compacted to not less than the percentage of maximum density specified below:

	Percent Laboratory maximum density	
	Cohesive material	Cohesionless material
Fill, embankment, and backfill		
Under structures, steps, around footings, and in trenches	90	92
Under grassed areas	85	92
Subgrade		
Under structures and top 12 inches	90	92

Approved compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and compacted as specified herein before to the required density prior to further construction thereon.

### 3.13 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory or may be performed by the Contractor subject to approval. Field in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted if necessary by the procedure described in ASTM D 2922, paragraph ADJUSTING CALIBRATION CURVE. ASTM D 2922 results in a wet unit weight of soil and when using this method ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D 3017. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed by the Contracting Officer. ASTM D 2937 shall be used only for soft, fine-grained, cohesive soils. The following number of tests, if performed at the appropriate time, shall be the minimum acceptable for each type operation.

#### 3.13.1 In-Place Densities

##### 3.13.1.1 In-Place Density of Subgrades

###### Field Density Tests

One test per 1000 square foot or fraction thereof.

##### 3.13.1.2 In-Place Density of Fills and Backfills

###### Testing of Backfill Materials

One test per 1000 square foot or fraction thereof of each lift for fill or backfill areas compacted by other than hand or hand-operated machines. The density for each lift of fill or backfill materials for trenches, pits, or other structures or areas less than 5 feet in width, which are compacted with hand or hand-operated machines shall be tested as follows: One test per each area less than 1000 square feet, or one test for each 100 linear foot of long narrow fills 500 feet or more in length. If ASTM D 2922 is used, in-place densities shall be checked by ASTM D 1556 as follows: One check per lift for each 3000 linear feet of long narrow fills, and a minimum of 1 check per lift for other fill and backfill areas.

#### 3.13.2 Moisture Content

In the stockpile, excavation or borrow areas, a minimum of two tests per day per type of material or source of materials being placed is required during stable weather conditions. During unstable weather, tests shall be made as dictated by local conditions and approved moisture content shall be tested in accordance with ASTM D 2216.

#### 3.13.3 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 250 cubic yards of fill and backfill, or when any change in material occurs which may affect the

optimum moisture content or laboratory maximum density will be made.

### 3.15 GRADING

Areas within 5 feet outside of each structure line shall be constructed true-to-grade, shaped to drain, and shall be maintained free of trash and debris until final inspection has been completed and the work has been accepted.

### 3.14 SPREADING TOPSOIL

Areas outside the building lines from which topsoil has been removed shall be topsoiled. The surface shall be free of materials that would hinder planting or maintenance operations. The subgrade shall be pulverized to a depth of 2 inches by disking or plowing for the bonding of topsoil with the subsoil. Topsoil shall then be uniformly spread throughout the geoweb voids, graded, and compacted to the thickness, elevations, slopes shown, and left free of surface irregularities. Topsoil shall be compacted by roller, or other approved equipment adequate enough to compact topsoil into geoweb voids. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to seeding, planting, or proper grading.

### 3.15 PROTECTION

Settlement or washing that occurs in graded, topsoiled, or backfilled areas prior to acceptance of the work shall be repaired and grades reestablished to the required elevations and slopes.

-- End of Section --

## SECTION 02231

## CLEARING AND GRUBBING

## PART 1 GENERAL

## 1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-03 Product Data

## Materials Other Than Salable Timber; G

Written permission to dispose of such products on private property shall be filed with the Contracting Officer.

## SD-04 Samples

## Herbicide

Submit samples in cans with manufacturer's label.

## 1.2 DELIVERY, STORAGE, AND HANDLING

Deliver materials to, store at the site, and handle in a manner which will maintain the materials in their original manufactured or fabricated condition until ready for use.

## PART 2 PRODUCTS

## 2.1 TREE WOUND PAINT

Bituminous based paint of standard manufacture specially formulated for tree wounds.

## 2.2 HERBICIDE

Comply with Federal Insecticide, Fungicide, and Rodenticide Act (Title 7 U.S.C. Section 136) for requirements on contractor's licensing, certification and record keeping. Contact the command Pest Control Coordinator prior to starting work.

## PART 3 EXECUTION

## 3.1 PROTECTION

## 3.1.1 Roads and Walks

Keep roads and walks free of dirt and debris at all times.

### 3.1.2 Trees, Shrubs, and Existing Facilities

Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require. Any damages resulting from Contractor's operations or neglect shall be repaired by the Contractor. Any cuts, skins, scrapes, or bruises to the bark of the trees designated to remain shall be carefully trimmed and local nursery accepted procedures used by the Contractor to seal damaged bark.

Trees to be left standing and uninjured will be designated by special marking, such as colored ribbons, placed on the trunk about 6 ft above the ground surface.

### 3.1.3 Utility Lines

Protect existing utility lines that are indicated to remain from damage. Notify the Contracting Officer immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the Contracting Officer in ample time to minimize interruption of the service.

## 3.2 CLEARING

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Clearing shall also include the removal and disposal of structures that obstruct, encroach upon, or otherwise obstruct the work. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches or more in diameter and shall be trimmed of all branches the heights indicated or directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Apply herbicide in accordance with the manufacturer's label to the top surface of stumps designated not to be removed.

## 3.3 TREE REMOVAL

Where indicated or directed, trees and stumps that are designated as trees shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots as specified in paragraph GRUBBING. Trees shall be disposed of as specified in paragraph DISPOSAL OF MATERIALS.

## 3.4 PRUNING

Trim trees designated to be left standing within the cleared areas of dead branches 1 1/2 inches or more in diameter; and trim branches to heights and in a manner as indicated. Neatly cut limbs and branches to be trimmed close to the bole of the tree or main branches.

### 3.5 GRUBBING

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth necessary to allow installation of sheet piles, soil anchors and erosion control items. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

### 3.6 DISPOSAL OF MATERIALS

#### 3.6.1 Nonsaleable Materials

##### Materials Other Than Salable Timber

Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations shall be disposed of outside the limits of the project at approved disposal sites, in accordance with all federal, state and local regulations.

-- End of Section --



## SECTION 02275

## FLOATING TURBIDITY BARRIER

## PART 1 GENERAL

## 1.1 GENERAL REQUIREMENTS

The work includes furnishing, delivering, and installing (as applicable) all material, labor, equipment, tools, and incidentals necessary to complete the work specified herein. The intent of the work under this section is to control siltation of excavated material into existing watercourses. Siltation control measures shall be constructed to the extent necessary to completely protect the water from siltation and environmental damage caused by the Contractor's operations. Construction methods and procedures shall be implemented to minimize siltation.

Floating turbidity barrier shall comply with the standards specified herein.

## 1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Floating turbidity barrier; G

Submit product information 30 days prior to starting work.

## PART 2 PRODUCTS

## 2.1 MATERIALS

## 2.1.1 Floating Turbidity Barrier

Materials for the floating turbidity barrier shall be as follows:

Curtain fabric: Bright color (yellow or orange) 10 mil thick polyethylene plastic or polyester reinforced vinyl sheets at least 22 ounces per square yard. Any seams shall be either vulcanized or sewn, and shall develop the full strength of the fabric.

Flotation devices: Flexible, buoyant units contained in an individual flotation sleeve or collar attached to the curtain. Buoyancy shall be sufficient to support the weight of the curtain and maintain a freeboard of at least 3 inches above the water surface level.

Top load line: Woven webbing or vinyl-sheathed steel cable, with a break strength in excess of 10,000 pounds, fabricated into the curtain fabric. Shall have suitable connecting devices that develop the full breaking strength for connecting to load lines in adjacent sections of the curtain.

Bottom/supplemental load line: Chain incorporated to the bottom hem of the curtain of sufficient weight to serve as a ballast to hold the curtain in a vertical position.

Floating anchor buoys: Flexible, buoyant unit of the same material as the floatation devices.

Bottom anchors: Grappling hook-, plow- or fluke-type (that digs into the bottom of the watercourse) or mushroom-type anchor (weighted) shall be used. Must be sufficient to hold the curtain in the same position relative to the bottom of the watercourse, without interfering with the action of the curtain.

End stakes: Stakes shall be 2 inch x 4 inch or 2 1/2 inch minimum diameter wooden stakes.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

The Contractor shall take every precaution to stop soil sediment from leaving the work limits of the Contractor's work area. The precautions are subject to approval of the Contracting Officer and are not limited to floating turbidity barrier. Floating turbidity barrier shall be installed prior to any work being performed that could impact adjacent watercourse. The area of proposed installation of the curtain should be inspected for obstacles and impediments that could damage the curtain or impair.

##### 3.1.1 Floating Turbidity Barrier

Floating Turbidity Barrier shall be installed in streams or other watercourses to intercept sediments in the waterway in accordance with the plans and specifications, and as directed by the Contracting Officer. Floating turbidity barrier shall be located approximately 50 feet from the point of discharge of drainage pipes or from construction operations affecting the waterways.

The Contractor shall first install the end stakes and bottom anchors and associated anchor buoys. The end stakes shall be located well into the shoreline, above the mean high water line, so as to fully enclose the area where sediment may enter the watercourse, accounting for the ebb and flow of the tides. When the anchors are secure, the furled fence should be secured to the upstream end point and then sequentially attached to the next downstream anchor point until the entire curtain is in position and attached to the downstream end stake. Prior to unfurling, the lay of the fence should be assessed, and the anchors adjusted as necessary. The furling lines shall then be cut to allow the curtain to drop.

Anchor buoys shall be employed on all anchors to prevent the current from submerging the floatation device at the anchor points. Care shall be taken to ensure that anchor points are of sufficient holding power to retain the curtain into the water. An anchor line shall run from the top load line (never attached to the bottom of the curtain) to a floating anchor buoy to the associated bottom anchor. The manufacturer's recommendations shall be followed with regard to bottom anchor spacing. The top load lines must contain enough slack to allow the anchor buoy and curtain to float freely with tidal changes without being pulled down.

A minimum gap of 1 foot shall exist between the bottom of the curtain fabric and the bottom of the watercourse at mean low water.

The Contractor shall avoid an excessive number of joints in the curtain by using a minimum continuous span of 50 feet between joints. The floating turbidity barrier shall be installed using a maximum span of 100 feet between anchor or stake locations.

Standard small craft warning buoys, as approved by the Contracting Officer, shall be located along the fence at a minimum of 100-foot intervals.

The floating turbidity barrier is required to remain intact during the life of the Contract. The floating turbidity barrier shall be located as shown on the plans.

### 3.2 MAINTENANCE

The Contractor shall continuously maintain the integrity of the floating turbidity barrier, including providing all necessary labor, equipment, and materials, until earthwork construction is completed and permanent erosion control measures are in place. The Contractor shall inspect the floating turbidity barrier on a daily basis to ensure they are functioning properly and not entangled with debris. The Contractor shall also inspect the floating turbidity barrier immediately after each storm and at least daily during prolonged rainfall or tidal cycles to determine if the floating turbidity barrier is functioning as designed. The Contractor shall immediately correct any deficiencies. Should the floating turbidity barrier become damaged or otherwise ineffective while it is still necessary, the Contractor shall immediately repair or replace the defective or damaged floating turbidity barrier. Maintenance of the floating turbidity barrier should continue until permanent erosion and sediment control measures are in place, established, or stabilized to the satisfaction of the Contracting Officer.

The turbidity curtain should be inspected daily and repaired or replaced immediately if necessary. Sediment must be removed when accumulations reach 1/3 the height of the curtain and stabilized away from the waterbody.

The barrier should be removed by carefully pulling it toward the construction site to minimize the release of attached sediment. Any floating construction or natural debris should be immediately removed to prevent damage to the curtain. If the curtain is oriented in a manner that faces the prevailing winds frequent checks of the anchorage should be made.

### 3.3 REMOVAL AND DISPOSAL

The floating turbidity barrier shall remain in place as shown in the plans until the end of the Contract or until the Contracting Officer directs its removal. Upon removal, the Contractor shall restore the area as directed by Contracting Officer. The turbidity barrier materials shall become the property of the Contractor and be removed from the site. Any vegetation disturbed during floating turbidity barrier removal shall be replanted at no additional cost to the Government.

-- End of Section --

## SECTION 02300

## EARTHWORK

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 422	(1963; R 1998) Particle-Size Analysis of Soils
ASTM D 1140	(1997) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve
ASTM D 1556	(1990; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2216	(1992) Laboratory Determination of Water (Moisture) Content of Soil and Rock
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 2937	(1994) Density of Soil in Place by the Drive-Cylinder Method
ASTM D 3017	(1988; R 1996e1) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(1998) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

## 1.2 DEFINITIONS

### 1.2.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM, SC, SW-SC, SP-SM, SP-SC, CL, ML, CL-ML. Satisfactory materials for grading shall be comprised of stones less than 8 inches, except for fill material for pavements and railroads which shall be comprised of stones less than 3 inches in any dimension.

### 1.2.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; and material classified as satisfactory which contains root and other organic matter or frozen material. The Contracting Officer shall be notified of any contaminated materials.

### 1.2.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Testing required for classifying materials shall be in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.

### 1.2.4 Degree of Compaction

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum density.

### 1.2.5 Topsoil

Material suitable for topsoils obtained from offsite areas and excavations are defined as soils that will be able to support plant life.

## 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

#### SD-01 Preconstruction Submittals

Unsatisfactory material disposal plan; G.

Procedure and location for disposal of unused satisfactory material.  
Blasting plan when blasting is permitted. Proposed source of borrow material.

#### SD-06 Test Reports

TESTING - Qualifications of the commercial testing laboratory or Contractor's testing facilities.

## SD-07 Certificates

laboratory Certification; G.

Qualifications of the commercial testing laboratory, or Contractor's testing laboratory

Physical Testing; G.

Within 24 hours of conclusion of physical tests, 3 copies of test results, including calibration curves and results of calibration tests.

Notification of Rock; G.

Notification of encountering rock in the project. Advance notice on the opening of excavation or borrow areas. Advance notice on shoulder construction for rigid pavements.

## 1.4 SUBSURFACE DATA

Subsurface soil boring logs are shown on the drawings. This data represent the best subsurface information available; however, variations may exist in the subsurface between boring locations.

## 1.5 CLASSIFICATION OF EXCAVATION

No consideration will be given to the nature of the materials, and all excavation will be designated as unclassified excavation.

## 1.5.1 Common Excavation

Common excavation shall include the satisfactory removal and disposal of all materials not classified as rock excavation.

## 1.6 BLASTING

Blasting will not be permitted.

## 1.7 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall be disposed of offsite at an approved disposal site, in accordance with all federal, state and local regulations. Satisfactory material removed from excavations shall be used, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. No satisfactory excavated material shall be wasted without specific written authorization. Satisfactory material authorized to be wasted shall be disposed of in designated areas approved for surplus material storage or designated waste areas as directed. Coarse rock from excavations shall be stockpiled and used for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. No excavated material shall be disposed of to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

## PART 2 PRODUCTS (Not Applicable)

## PART 3 EXECUTION

## 3.1 GENERAL EXCAVATION

The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Grading shall be in conformity with the typical sections shown and the tolerances specified in paragraph FINISHING. Satisfactory excavated materials shall be transported to and placed in fill or embankment within the limits of the work. Unsatisfactory materials encountered within the limits of the work shall be excavated below grade and replaced with satisfactory materials as directed. Such excavated material and the satisfactory material ordered as replacement shall be included in excavation.

## 3.1.1 Drainage Structures

Excavations shall be made to the lines, grades, and elevations shown, or as directed. Trenches and foundation pits shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Rock or other hard foundation material shall be cleaned of loose debris and cut to a firm, level, stepped, or serrated surface. Loose disintegrated rock and thin strata shall be removed. When concrete or masonry is to be placed in an excavated area, the bottom of the excavation shall not be disturbed. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed. Where pile foundations are to be used, the excavation of each pit shall be stopped at an elevation 1 foot above the base of the footing, as specified, before piles are driven. After the pile driving has been completed, loose and displaced material shall be removed and excavation completed, leaving a smooth, solid, undisturbed surface to receive the concrete or masonry.

## 3.2 SELECTION OF BORROW MATERIAL

Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from the borrow areas shown or from other approved sources, either private or within the limits of the project site, selected by the Contractor. Unless otherwise provided in the contract, the Contractor shall obtain from the Army Corps of Engineers the right to procure material, pay royalties and other charges involved, and bear the expense of developing the sources, including rights-of-way for hauling. Borrow material from approved sources on Government-controlled land may be obtained without payment of royalties. Unless specifically provided, no borrow shall be obtained within the limits of the project site without prior written approval. Necessary clearing, grubbing, and satisfactory drainage of borrow pits and the disposal of debris thereon shall be considered related operations to the borrow excavation.

## 3.3 OPENING AND DRAINAGE OF EXCAVATION AND BORROW PITS

The Contractor shall notify the Contracting Officer sufficiently in advance of the opening of any excavation or borrow pit to permit elevations and measurements of the undisturbed ground surface to be taken. Except as otherwise permitted, borrow pits and other excavation areas shall be excavated providing adequate drainage. Overburden and other spoil material

shall be transported to designated spoil areas or otherwise disposed of as directed. Borrow pits shall be neatly trimmed and drained after the excavation is completed. The Contractor shall ensure that excavation of any area, operation of borrow pits, or dumping of spoil material results in minimum detrimental effects on natural environmental conditions.

### 3.4 GRADING AREAS

Where indicated, work will be divided into grading areas within which satisfactory excavated material shall be placed in embankments, fills, and required backfills. The Contractor shall not haul satisfactory material excavated in one grading area to another grading area except when so directed in writing.

### 3.5 BACKFILL

Backfill adjacent to any and all types of structures shall be placed and compacted to at least 90 percent laboratory maximum density for cohesive materials or 95 percent laboratory maximum density for cohesionless materials to prevent wedging action or eccentric loading upon or against the structure. Ground surface on which backfill is to be placed shall be prepared as specified in paragraph 3.7 PREPARATION OF GROUND SURFACE FOR EMBANKMENTS. Compaction requirements for backfill materials shall also conform to the applicable portions of paragraphs 3.7 PREPARATION OF GROUND SURFACE FOR EMBANKMENTS, 3.8 EMBANKMENTS, and 3.9 SUBGRADE PREPARATION, and Section 02630 STORM-DRAINAGE. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

### 3.6 PREPARATION OF GROUND SURFACE FOR EMBANKMENTS

#### 3.6.1 General Requirements

Ground surface on which fill is to be placed shall be stripped of live, dead, or decayed vegetation, rubbish, debris, and other unsatisfactory material; plowed, disked, or otherwise broken up to a depth of 6 inches; pulverized; moistened or aerated as necessary; thoroughly mixed; and compacted to at least 90 percent laboratory maximum density for cohesive materials or 95 percent laboratory maximum density for cohesionless materials. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. The prepared ground surface shall be scarified and moistened or aerated as required just prior to placement of embankment materials to assure adequate bond between embankment material and the prepared ground surface.

#### 3.6.2 Frozen Material

Embankment shall not be placed on a foundation which contains frozen material, or which has been subjected to freeze-thaw action. This prohibition encompasses all foundation types, including the natural ground, all prepared subgrades (whether in an excavation or on an embankment) and all layers of previously placed and compacted earth fill which become the foundations for successive layers of earth fill. All material that freezes or has been subjected to freeze-thaw action during the construction work, or during periods of temporary shutdowns, such as, but not limited to, nights, holidays, weekends, winter shutdowns, or earthwork operations, shall be removed to a depth that is acceptable to the Contracting Officer and replaced with new material. Alternatively, the material will be



thawed, dried, reworked, and recompact to the specified criteria before additional material is placed. The Contracting Officer will determine when placement of fill shall cease due to cold weather. The Contracting Officer may elect to use average daily air temperatures, and/or physical observation of the soils for his determination. Embankment material shall not contain frozen clumps of soil, snow, or ice.

### 3.7 EMBANKMENTS

#### 3.7.1 Earth Embankments

Earth embankments shall be constructed from satisfactory materials free of organic or frozen material and rocks with any dimension greater than 3 inches. The material shall be placed in successive horizontal layers of loose material not more than 8 inches in depth. Each layer shall be spread uniformly on a soil surface that has been moistened or aerated as necessary, and scarified or otherwise broken up so that the fill will bond with the surface on which it is placed. After spreading, each layer shall be plowed, disked, or otherwise broken up; moistened or aerated as necessary; thoroughly mixed; and compacted to at least 90 percent laboratory maximum density for cohesive materials or 95 percent laboratory maximum density for cohesionless materials. Compaction requirements for the upper portion of earth embankments forming subgrade for pavements shall be identical with those requirements specified in paragraph SUBGRADE PREPARATION. Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment.

### 3.8 SUBGRADE PREPARATION

#### 3.8.1 Construction

Subgrade shall be shaped to line, grade, and cross section, and compacted as specified. This operation shall include plowing, disking, and any moistening or aerating required to obtain specified compaction. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. Rock encountered in the cut section shall be excavated to a depth of 6 inches below finished grade for the subgrade. Notification of rock encountered shall be provided. Low areas resulting from removal of unsatisfactory material or excavation of rock shall be brought up to required grade with satisfactory materials, and the entire subgrade shall be shaped to line, grade, and cross section and compacted as specified. After rolling, the surface of the subgrade for roadways shall not show deviations greater than 1 inch when tested with a 10 foot straightedge applied both parallel and at right angles to the centerline of the area. The elevation of the finish subgrade shall not vary more than 0.05 foot from the established grade and cross section.

#### 3.8.2 Compaction

Compaction shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment. Other areas beside pavement and trees shall be compacted to at least 95 percent of laboratory maximum density.

### 3.9 FINISHING

The surface of excavations, embankments, and subgrades shall be finished to

a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for graded areas shall be within 0.1 foot of the grades and elevations indicated except that the degree of finish for subgrades shall be specified in paragraph 3.8 SUBGRADE PREPARATION. Gutters and ditches shall be finished in a manner that will result in effective drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing materials.

### 3.10 TESTING - Qualifications of the commercial testing laboratory or Contractor's testing facilities.

The result of all Physical Testing shall be submitted within 24 hours of the conclusion of the tests.

Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. If the Contractor elects to establish testing facilities, no work requiring testing will be permitted until the Contractor's facilities have been inspected and approved by the Contracting Officer and laboratory certification provided. Field in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2167, ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using only the sand cone method as described in ASTM D 1556. ASTM D 2922 results in a wet unit weight of soil and when using this method ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D 3017; the calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed by the Contracting Officer. ASTM D 2937, Drive Cylinder Method shall be used only for soft, fine-grained, cohesive soils. When test results indicate, as determined by the Contracting Officer, that compaction is not as specified, the material shall be removed, replaced and recompact to meet specification requirements. Tests on recompact areas shall be performed to determine conformance with specification requirements. Inspections and test results shall be certified by a registered professional civil engineer. These certifications shall state that the tests and observations were performed by or under the direct supervision of the Contracting Officer and that the results are representative of the materials or conditions being certified by the tests. The following number of tests, if performed at the appropriate time, will be the minimum acceptable for each type operation.

#### 3.10.1 Fill and Backfill Material Gradation

One test per 200 cubic yards stockpiled or in-place source material. Gradation of fill and backfill material shall be determined in accordance with ASTM C 136, ASTM D 422, ASTM D 1140.

#### 3.10.2 In-Place Densities

- a. One test per 1000 square feet, or fraction thereof, of each lift of fill or backfill areas compacted by other than hand-operated machines.
- b. One test per 1000 square feet, or fraction thereof, of each lift of fill or backfill areas compacted by hand-operated machines.
- c. One test per 100 linear feet, or fraction thereof, of each lift of

embankment or backfill for roads.

### 3.10.3 Check Tests on In-Place Densities

If ASTM D 2922 is used, in-place densities shall be checked by ASTM D 1556 as follows:

- a. One check test per lift for each 2000 square feet, or fraction thereof, of each lift of fill or backfill compacted by other than hand-operated machines.
- b. One check test per lift for each 2000 square feet, of fill or backfill areas compacted by hand-operated machines.
- c. One check test per lift for each 100 linear feet, or fraction thereof, of embankment or backfill for roads.

### 3.10.4 Moisture Contents

In the stockpile, excavation, or borrow areas, a minimum of two tests per day per type of material or source of material being placed during stable weather conditions shall be performed. During unstable weather, tests shall be made as dictated by local conditions and approved by the Contracting Officer.

### 3.10.5 Optimum Moisture and Laboratory Maximum Density

Tests shall be made for each type material or source of material including borrow material to determine the optimum moisture and laboratory maximum density values. One representative test per 200 cubic yards of fill and backfill, or when any change in material occurs which may affect the optimum moisture content or laboratory maximum density.

### 3.10.6 Tolerance Tests for Subgrades

Continuous checks on the degree of finish specified in paragraph 3.8 SUBGRADE PREPARATION shall be made during construction of the subgrades.

## 3.11 SUBGRADE AND EMBANKMENT PROTECTION

During construction, embankments and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained to drain effectively at all times. The finished subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until ballast, subbase, base, or pavement is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No subbase, base course, ballast, or pavement shall be laid until the subgrade has been checked and approved, and in no case shall subbase, base, surfacing, pavement, or ballast be placed on a muddy, spongy, or frozen subgrade.

-- End of Section --

## SECTION 02340

## SOIL STABILIZATION

## PART 1 GENERAL

## 1.1 REFERENCES

## RELATED SECTIONS

Section 02300 - Earthwork

Section 02378A - Geotextiles

## AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION (AASHTO)

AASHTO M 218	Steel Sheet, Zinc-Coated (Galvanized) for Corrugated Steel Pipe
AASHTO M 288	Geotextile Specification for Highway Applications

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1505	Density of Plastics by the Density-Gradient Technique
ASTM D 1693	Environmental Stress-Cracking of Ethylene Plastics
ASTM D 5199	Measuring Nominal Thickness of Geotextiles and Geomembranes
ASTM E 41	Terminology Relating to Conditioning

## 1.2 SYSTEM DESCRIPTION

Cellular confinement system consists of geocell material into which specific infill materials are placed. Geocell material is a polyethylene sheet strip assembly, connected by a series of offset, full-depth, ultrasonic welded seams aligned perpendicular to longitudinal axis of strips which, when expanded, form walls of a flexible, 3-dimensional, cellular confinement system.

Complete slope protection system includes Geoweb sections, cell infill materials, stake anchors, geotextiles, and surface treatments.

## 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-02 Shop Drawings

Submit manufacturer's shop drawings including section layout, direction of expansion, and anchor stake locations.

## SD-03 Product Data

## SD-04 Samples

Cell Sections; G  
Stake Anchors; G  
Geosynthetic Components; G

## SD-05 Qualifications

Installer; G

Certification stating installer is experienced in the installation of the specified products.

Field Representative; G

Certification stating manufacturer's field representative is experienced in the installation of the specified products.

## SD-07 Certificates

Percentage of Carbon Black; G  
Polyethylene Density; G

## 1.4 QUALITY ASSURANCE

## 1.4.1 Manufacturer's Qualifications

Quality management system certified to ISO 9002

## 1.4.2 Installer's Qualifications

- a. Experienced in the installation of the specified products.
- b. Employs persons trained in the installation of the specified products.

## 1.4.3 Manufacturer's Field Representative Qualifications

Experienced in the installation of the specified products.

## 1.4.4 Pre-Application Meeting

Convene a pre-application meeting 2 weeks before the start of installation of the cellular confinement system. Require attendance of parties directly affecting work in this section, including the Contractor, Contracting Officer, installer, and manufacturer's representative. Review installation and coordination with other work.

## 1.5 DELIVERY, STORAGE AND HANDLING

## 1.5.1 Delivery

Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and

manufacturer.

#### 1.5.2 Storage

Store materials in accordance with manufacturer's instructions and out of direct sunlight.

#### 1.5.3 Handling

Protect materials during handling and installation to prevent damage.

### PART 2 PRODUCTS

#### 2.1 GEOWEB CELLULAR CONFINEMENT SYSTEM

##### 2.1.1 Base Materials

1. Polyethylene Stabilized with Carbon Black
  - a. Density, ASTM D 1505: 0.935 to 0.965 g/cm<sup>3</sup> (58.4 to 60.2 pounds per cubic foot)
  - b. Environmental Stress Crack Resistance (ESCR), ASTM D 1693: 3,000 hours
  - c. Ultra-violet Light Stabilization: Carbon Black
  - d. Carbon Black Content: 1.5 to 2 percent by weight, through addition of a carrier with a certified carbon black content
  - e. Homogeneously distributed throughout material.

##### 2.1.2 Strip Properties and Assembly

1. Perforated Textured Strip/Cell
  - a. Strip Sheet Thickness, ASTM D 5199: 1.27 mm (50 mil), minus 5 percent, plus 10 percent. Determine thickness in the flat, before surface disruption.
  - b. Textured Sheet Thickness: 1.52 mm plus or minus 0.15 mm (60 mil plus or minus 6 mil)
  - c. Polyethylene Strips: Textured surface with a multitude of rhomboidal (diamond shape) indentations.
  - d. Indentation Surface Density: 22 to 31 per cm<sup>2</sup> (140 to 200 per square inch)
  - e. Polyethylene Strips: Perforated with horizontal rows of 10 mm (0.4 inch) diameter holes.
  - f. Perforations Within Each Row: 19 mm (0.75 inch) on-center
  - g. Horizontal Rows: Staggered and separated 12 mm (0.50 inch) relative to hole centers
  - h. Edge of Strip to Nearest Edge of Perforation: 8 mm (0.3 inch) minimum
  - i. Centerline of Spot Weld to Nearest Edge of Perforation: 18 mm (0.7 inch) minimum
2. Assembly of Cell Sections
  - a. Fabricate using strips of sheet polyethylene each with a length of 3.61 m (142 inches) and a width equal to cell depth.
  - b. Connect strips using full-depth, ultrasonic spot-welds align perpendicular to longitudinal axis of strip.
  - c. Weld Spacing for Cell Sections: 445 mm plus or minus 2.5 mm (17.5 inches plus or minus 0.10 inch)
  - d. Ultrasonic Weld Melt-Pool Width: 25 mm (1.0 inch) maximum

### 2.1.3 Cell Properties

1. Individual Cells: Uniform in shape and size when expanded.
2. Individual Cell Dimensions: Cell Section  
Dimensions +/- 10%
  - a. Length 287 mm (11.3 inches)
  - b. Width 320 mm (12.6 inches)
  - c. Area plus or minus 1%: 460 cm<sup>2</sup> (71.3 square inches)
  - d. Depth: 150 mm (6 inches)

### 2.1.4 Cell Seam Strength Tests

1. Short-Term Seam Peel-Strength Test
  - a. Cell Seam Strength: Uniform over full depth of cell
  - b. Minimum Seam Peel Strength: 480 pounds 6 inch depth
2. Long-Term Seam Peel-Strength Test
  - a. Conditions: Minimum of 7 days in a temperature-controlled environment that undergoes change on a 1-hour cycle from room temperature to 54 degrees C (130 degrees F).
  - b. Room Temperature: ASTM E 41
  - c. Test Samples: Weld two 4 inch wide strips together.
  - d. Test: Test sample consisting of 2 carbon black stabilized strips shall support a 160 pound load for test period.

### 2.1.5 Section Types and Sizes

1. Cell Size: 11.3 inches long x 12.6 inches wide
2. Section Length: 35 feet
3. Section Width: 9.2 feet
4. Section Area: 270 square feet

## 2.2 ANCHORING COMPONENTS

1. Steel J-Pin Stakes
  - a. Material: Mild steel or reinforcing steel rod
  - b. Galvanizing: AASHTO M 218
  - c. Return: Minimum-radius, 180-degree return at one end
  - d. Rod Diameter: 0.50 inch
  - e. Stake Length: As indicated on the drawings.

## 2.3 RELATED GEOSYNTHETIC COMPONENTS

Geotextiles: AASHTO M 288

## 2.4 CELL INFILL MATERIALS

1. Cell infill materials include 1 or a combination of the following:
  - a. Infill with screened topsoil, free of foreign material.

## 2.5 SURFACE TREATMENTS

1. Surface treatment includes 1 or a combination of the following:
  - a. Vegetation
  - b. Degradable revegetative blankets
  - c. Sprayed emulsions and binders

## PART 3 EXECUTION

## 3.1 EXAMINATION

Verify site conditions are as indicated on the drawings. Notify the Contracting Officer if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

Verify layout of structure is as indicated on the drawings. Notify the Contracting Officer if layout of structure is not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

## 3.2 INSTALLATION OF SLOPE AND CHANNEL PROTECTION SYSTEMS

1. Prepare subgrade and install in accordance with manufacturer's instructions.
2. Subgrade Preparation
  - a. Excavate or fill foundation soils so top of installed Geoweb section is flush with or slightly lower than adjacent terrain or final grade as indicated on the drawings or as directed by the Contracting Officer.
  - b. Install non-woven geotextile underlayer, if specified, on prepared surfaces, ensuring required overlaps are maintained and outer edges of geotextile are buried a minimum of 6 inches below grade.
3. Placement and Anchoring
  - a. Anchor Geoweb sections using j-pin anchors and frequency of anchoring as indicated on the drawings or as directed by the Contracting Officer.
  - b. Expand Geoweb sections down slope. Confirm each Geoweb section is expanded uniformly to required dimensions and outer cells of each layer are correctly aligned. Interleaf or overlap edges of adjacent sections in each layer, according to which side wall profiles abut. Ensure upper surfaces of adjoining Geoweb sections are flush at joint and adjoining cells are fully anchored. Anchor with specified anchors in a prescribed pattern throughout slope surface.
3. Placement of Infill
  - a. Place infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip. Limit drop height to a maximum of 3 feet. Avoid displacement of Geoweb sections by infilling from crest to toe of slope. Overfill and compact infill in accordance with consistency of material and cell depth as follows:
    - i. Overfill screened topsoil between 1 to 2 inches and lightly tamp or roll to leave soil flush with top edge of cell walls. Apply specified surface treatment.
    - ii. Overfill loose granular materials approximately 25 mm (1 inch) and compact with a plate tamper or backhoe bucket. Remove loose surface material so infill is flush with top edges of cells.

-- End of Section --



## SECTION 02370A

## SOIL EROSION AND SEDIMENT CONTROL

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM D 1248	(2002) Polyethylene Plastics Extrusion Materials for Wire and Cable
ASTM D 1777	(1996; R 2002) Thickness of Textile Materials
ASTM D 3776	(1996; R 2002) Mass Per Unit Area (Weight) of Fabric
ASTM D 3787	(2001) Bursting Strength of Textiles - Constant-Rate-of-Traverse (CRT), Ball Burst Test
ASTM D 3884	(2001e1) Abrasion Resistance of Textile Fabrics (Rotary Platform, Double-Head Method)
ASTM D 4355	(2002) Deterioration of Geotextiles from Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4833	(2000e1) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 648	(2001) Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-02 Shop Drawings

Layout; G

Obstructions Below Ground; G

Scale drawings defining areas to receive recommended materials as required by federal, state or local regulations.

## SD-03 Product Data

Geotextile Fabrics; G

Manufacturer's literature including physical characteristics, application and installation instructions.

Seed Establishment Period

Equipment; G

A listing of equipment to be used for the application of erosion control materials.

Finished Grade; G

## SD-04 Samples

Materials

Geotextile Fabrics; 6 inch square.

## SD-07 Certificates

Fill Material

Geotextile Fabrics

Prior to delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following.

For items listed in this section:

- a. Certification of recycled content or,
- b. Statement of recycled content.

c. Certification of origin including the name, address and telephone number of manufacturer.

Erosion Control Plan

## Construction Work Sequence Schedule

Erosion control plan. Construction sequence schedule.

## Installer's Qualification

The installer's company name and address; training and experience and or certification.

## Recycled Plastic

Individual component and assembled unit structural integrity test; creep tolerance; deflection tolerance; and vertical load test results. The estimated percentage of recovered material content in the material and components. Life-cycle durability.

Seed; G

## SD-10 Operation and Maintenance Data

## Maintenance Instructions

Instruction for year-round care of installed material. The Contractor shall include manufacturer supplied spare parts.

## Maintenance Record

Record of maintenance work performed, of measurements and findings for product failure, recommendations for repair, and products replaced.

## 1.3 DESCRIPTION OF WORK

The work shall consist of furnishing and installing soil surface erosion control materials, including fine grading, mulching and miscellaneous related work, within project limits and in areas outside the project limits where the soil surface is disturbed from work under this contract at the designated locations. This work shall include all necessary labor, supervision and equipment for installation of a complete system. This section shall be coordinated with the requirements of Section 02300 EARTHWORK.

## 1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

Materials shall be stored in designated areas and as recommended by the manufacturer protected from the elements, direct exposure, and damage. Containers shall not be dropped from trucks. Material shall be free of defects that would void required performance or warranty. Geosynthetic binders and synthetic soil binders shall be delivered in the manufacturer's original sealed containers and stored in a secure area.

- a. Erosion control blankets and geotextile fabric shall be furnished in rolls with suitable wrapping to protect against moisture and extended ultraviolet exposure prior to placement. Erosion control blanket and geotextile fabric rolls shall be labeled to provide identification sufficient for inventory and quality control purposes.

- b. Seed shall be inspected upon arrival at the jobsite for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected.

#### Equipment

A listing of equipment to be used for the application of erosion control materials.

### 1.5 SUBSTITUTIONS

Substitutions will not be allowed without written request and approval from the Contracting Officer.

### 1.6 INSTALLER'S QUALIFICATION

The installer shall be certified by the manufacturer for training and experience installing the material.

### 1.7 MATERIALS

The Contractor shall submit samples of the following:

- a. Geotextile fabrics, 6 inch square.
- b. Fill Material

### 1.8 WARRANTY

Erosion control material shall have a warranty for use and durable condition for project specific installations. Temporary erosion control materials shall carry a minimum eighteen month warranty. Permanent erosion control materials shall carry a minimum three year warranty.

## PART 2 PRODUCTS

### 2.1 SEED

The Contractor shall submit; classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested, 30 day prior to commencement of seeding.

### 2.2 SEED ESTABLISHMENT PERIOD

The Contractor shall submit the calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of the seeded area covered for each period shall be described. The seed establishment period shall be submitted 30 days prior to commencement of seeding.

### 2.3 RECYCLED PLASTIC

Recycled plastic shall contain a minimum 85 percent of recycled post-consumer product. Recycled material shall be constructed or manufactured with a maximum 1/4 inch deflection or creep in any member, according to ASTM D 648 and ASTM D 1248. The components shall be molded of ultraviolet (UV) and color stabilized polyethylene. The material shall consist of a minimum 75 percent plastic profile of high-density

polyethylene, low-density polyethylene, and polypropylene raw material. The material shall be non-toxic and have no discernible contaminants such as paper, foil, or wood. The material shall contain a maximum 3 percent air voids and shall be free of splinters, chips, peels, buckling, and cracks. Material shall be resistant to deformation from solar heat gain.

## 2.4 MULCH

### 2.4.1 Straw

Straw shall be stalks from oats, wheat, rye, barley, or rice, furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

### 2.4.2 Hay

Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, furnished in an air-dry condition suitable for placing with commercial mulch-blowing equipment.

## 2.5 GEOTEXTILE FABRICS

Geotextile fabrics shall be woven of polypropylene filaments formed into a stable network so that the filaments retain their relative position to each other. Sewn seams shall have strength equal to or greater than the geotextile itself. Fabric shall be installed to withstand maximum velocity flows as recommended by the manufacturer. The geotextile shall conform to the following minimum average roll values:

Property	Performance	Test Method
Weight		ASTM D 3776
Thickness		ASTM D 1777
Permeability		ASTM D 4491
Abrasion Resistance,	58 percent X	
Type (percent strength retained)	81 percent	ASTM D 3884
Tensile Grab Strength	1,467 N X 1, 933 N	ASTM D 4632
Grab Elongation	15percent X 20percent	ASTM D 4632
Burst Strength	5,510 kN/m <sup>2</sup>	ASTM D 3787
Puncture Strength	733 N	ASTM D 4833
Trapezoid Tear	533 N X 533 N	ASTM D 4533
Apparent Opening Size	40 US Std Sieve	ASTM D 4751
UV Resistance @ 500 hrs	90 percent	ASTM D 4355

## PART 3 EXECUTION

### 3.1 CONDITIONS

The Contractor shall obtain a soil erosion and sediment control permit. All work carried out under this contract must adhere to this permit.

The Contractor shall submit a construction work sequence schedule, with the approved erosion control plan a minimum of 30 days prior to start of construction. The work schedule shall coordinate the timing of land disturbing activities with the provision of erosion control measures. Erosion control operations shall be performed under favorable weather

conditions; when excessive moisture, frozen ground or other unsatisfactory conditions prevail, the work shall be stopped as directed. When special conditions warrant a variance to earthwork operations, a revised construction schedule shall be submitted for approval. Erosion control materials shall not be applied in adverse weather conditions which could affect their performance.

### 3.1.1 Finished Grade

The Contractor shall verify that finished grades are as indicated on the drawings; finish grading and compaction shall be completed in accordance with Section 02300 EARTHWORK, prior to the commencement of the work. The location of underground utilities and facilities in the area of the work shall be verified and marked. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

### 3.1.2 Site Preparation

#### 3.1.2.1 Soil Excavation

The foundation soil shall be excavated or filled as required to the footing grades and dimensions as shown on the drawings or as directed by the Contracting Officer.

#### 3.1.2.2 Soil Testing

The foundation soil shall be proof rolled and examined by the Contracting Officer to ensure that it meets minimum strength requirements according to the design assumptions. If unacceptable foundation soils are encountered, the Contractor shall excavate the affected areas and replace said areas with suitable quality material under the direction of the Contracting Officer.

#### 3.1.2.3 Native Soil

In cut areas, the native soil shall be excavated to the lines and grades shown on the plans and moved to a suitable location for reuse as directed by the Contracting Officer. The procedures, extent, and scheduling of temporary excavations for the reinforced earth retention structure shall be approved by the Contracting Officer.

### 3.1.3 Retained Soil Placement (Fill Situation)

Retained soil shall be placed behind the infill soil in maximum lift thicknesses of 8 (eight) inches and compacted to 95% Standard Proctor density.

### 3.1.4 Material Handling and Storage

#### 3.1.4.1 Material Handling

The Contractor shall check all materials which are a part of the reinforced slope or earth retention structures and have been delivered to the site, to ensure that the correct materials have been received.

#### 3.1.4.2 Material Storage

Materials shall be stored on-site in a manner that will insure that no damage will occur to any of the materials. Damaged materials shall be

replaced at the Contractor's expense.

### 3.2 SITE PREPARATION

#### 3.2.1 Soil Test

Soil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size and mechanical analysis. Sample collection onsite shall be random over the entire site. The test shall determine the soil particle size as compatible for the specified material.

#### 3.2.2 Layout

Erosion control material locations may be adjusted to meet field conditions. When soil tests result in unacceptable particle sizes, a shop drawing shall be submitted indicating the corrective measures.

#### 3.2.3 Protecting Existing Vegetation

When there are established lawns in the work area, the turf shall be covered and/or protected or replaced after construction operations. Existing trees, shrubs, and plant beds that are to be preserved shall be barricaded along the dripline. Damage to existing trees shall be mitigated by the Contractor at no additional cost to the Government. Damage shall be assessed by a state certified arborist or other approved professional using the National Arborist Association's tree valuation guideline.

#### 3.2.4 Obstructions Below Ground

When obstructions below ground affect the work, shop drawings showing proposed adjustments to placement of erosion control material shall be submitted for approval.

### 3.3 INSTALLATION

#### 3.3.1 Seeding

When seeding is required prior to installing mulch on synthetic grid systems the Contractor shall verify that seeding will be completed in accordance with Section 02300 EARTHWORK.

#### 3.3.2 Mechanical Anchor

Mechanical anchor shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment.

#### 3.3.3 Non-Asphaltic Tackifier

Hydrophilic colloid shall be applied at the rate recommended by the manufacturer, using hydraulic equipment suitable for thoroughly mixing with water. A uniform mixture shall be applied over the area.

#### 3.3.4 Articulating Cellular Concrete Block System Installation

##### 3.3.4.1 Backfilling Cellular Block System

Backfilling of openings between blocks shall be completed a maximum of 7 days after placement of the filter, to protect the geotextile from

ultraviolet radiation. As the installation progresses, backfilling shall include contiguous perimeter termination trenches.

### 3.4 CLEAN-UP

Excess material, debris, and waste materials shall be disposed offsite at an approved landfill or recycling center. Adjacent paved areas shall be cleared. Immediately upon completion of the installation in an area, the area shall be protected against traffic or other use by erecting barricades and providing signage as required, or as directed.

### 3.5 WATERING SEED

Water shall be applied to supplement rainfall at a sufficient rate to ensure moist soil conditions to a minimum 1 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed. Watering of other adjacent areas or plant material shall be prevented.

### 3.6 MAINTENANCE RECORD

A record shall be furnished describing the maintenance work performed, record of measurements and findings for product failure, recommendations for repair, and products replaced.

#### 3.6.1 Maintenance

Maintenance shall include eradicating weeds; protecting embankments and ditches from surface erosion; maintaining the performance of the erosion control materials and mulch; protecting installed areas from traffic.

##### 3.6.1.1 Maintenance Instructions

Written instructions containing drawings and other necessary information shall be furnished, describing the care of the installed material; including, when and where maintenance should occur, and the procedures for material replacement.

##### 3.6.1.2 Patching and Replacement

Unless otherwise directed, material shall be placed, seamed or patched as recommended by the manufacturer. Material not meeting the required performance as a result of placement, seaming or patching shall be removed from the site. The Contractor shall replace the unacceptable material at no additional cost to the Government.

### 3.7 SATISFACTORY STAND OF GRASS PLANTS

A satisfactory stand of grass plants from the revegetation mat area shall be a minimum 10 grass plants per square foot. The total bare spots shall not exceed 2 percent of the total revegetation mat area.

-- End of Section --



## SECTION 02378A

## GEOTEXTILES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM D 123	(2003) Textiles
ASTM D 4354	(1999) Sampling of Geosynthetics for Testing
ASTM D 4355	(2002) Deterioration of Geotextiles from Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4833	(2000e1) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D 4884	(1996) Strength of Sewn or Thermally Bonded Seams of Geotextiles

## U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 1110-2-1601	(1994) Hydraulic Design of Flood Control Channels
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## 1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-04 Samples

Submit geotextile samples, to determine compliance with the requirements in this specification, a minimum of 30 days prior to the beginning of installation of the same textile. Upon delivery of the geotextile, submit duplicate copies of the written certificate of compliance signed by a legally authorized official of the manufacturer. The certificate shall state that the geotextile shipped to the site meets the chemical requirements and exceeds the minimum average roll value listed in TABLE 1, MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE. Upon request, supply quality control and quality assurance tests for the geotextile. All samples provided shall be from the same production lot as will be supplied for the contract, and shall be the full manufactured width of the geotextile by at least 10 feet long, except that samples for seam strength may be a full width sample folded over and the edges stitched for a length of at least 5 feet. Samples submitted for testing shall be identified by manufacturers lot designation. For needle punched geotextile, the manufacturer shall certify that the geotextile has been inspected using permanent on-line metal detectors and does not contain any needles.

## SD-07 Certificates

## Geotextile; G

Submit the manufacturer's certification of the geotextile material. All brands of geotextile and all seams to be used will be accepted on the basis of mill certificates or affidavits. Submit duplicate copies of the mill certificate or affidavit signed by a legally authorized official from the company manufacturing the geotextile. The mill certificate or affidavit shall attest that the geotextile meets the chemical, physical and manufacturing requirements stated in this specification.

## 1.3 SHIPMENT, HANDLING, AND STORAGE

## 1.3.1 Shipment and Storage

Only approved geotextile rolls shall be delivered to the project site. All geotextile shall be labeled, shipped, stored, and handled in accordance with ASTM D 4873. No hooks, tongs, or other sharp instruments shall be used for handling geotextile.

## PART 2 PRODUCTS

## 2.1 MATERIALS

## 2.1.1 Geotextile

## 2.1.1.1 General

The geotextile shall be a non-woven pervious sheet of plastic yarn as defined by ASTM D 123. The geotextile shall equal or exceed the minimum average roll values listed in TABLE 1, MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE. Strength values indicated in the table are for the weaker principal direction.

TABLE 1  
MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE

PROPERTY	UNITS	ACCEPTABLE VALUES		TEST METHOD
		Geotextile Under Crushed Stone & Geoweb	Geotextile Under Riprap	
GRAP STRENGTH	lb	115	200	ASTM D 4632
SEAM STRENGTH	lb	NA	NA	ASTM D 4632
PUNCTURE	lb	40	80	ASTM D 4833
TRAPEZOID TEAR	lb	25	40	ASTM D 4533
PERMEABILITY	cm/sec	0.21	0.21	ASTM D 4491
APPARENT OPENING SIZE	U.S. SIEVE	70	80	ASTM D 4751
PERMITTIVITY	sec -1	1.8	1.2	ASTM D 4491
ULTRAVIOLET DEGRADATION	Percent	50 AT 500 Hrs	50 AT 500 Hrs	ASTM D 4355

#### 2.1.1.2 Geotextile Fiber

Fibers used in the manufacturing of the geotextile shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of polyolefins, polyesters, or polyamides. Stabilizers and/or inhibitors shall be added to the base polymer if necessary to make the filaments resistant to deterioration caused by ultraviolet light and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the edges. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile.

#### 2.1.2 Seams

The seams of the geotextile shall be sewn with thread of a material meeting the chemical requirements given above for geotextile yarn or shall be bonded by cementing or by heat. The sheets of geotextile shall be attached at the factory or another approved location, if necessary. Seam shall be tested in accordance with method ASTM D 4884. The strength of the seam shall be not less than 90 percent of the required grab tensile strength of the unaged geotextile in any principal direction.

#### 2.1.3 Securing Pins

The geotextile shall be secured to the embankment or foundation soil by pins to prevent movement prior to placement of revetment materials. Other appropriate means to prevent movement such as staples, sand bags, and stone could also be used. Securing pins shall be inserted through both strips of overlapped geotextile along the line passing through midpoints of the overlap. Securing pins shall be removed as placement of revetment materials are placed to prevent tearing of geotextile or enlarging holes

maximum spacing between securing pins depends on the steepness of the embankment slope. The maximum pins spacing shall be equal to or less than 2 ft. When windy conditions prevail at the construction site, the number of pins should be increased upon the demand of the Contracting Officer. Terminal ends of the geotextile shall be anchored with key trench or apron at crest, toe of the slope and upstream and downstream limits of installation.

## 2.2 INSPECTIONS, VERIFICATIONS, AND TESTING

### 2.2.1 Manufacturing and Sampling

Geotextiles and factory seams shall meet the requirements specified in TABLE 1, MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE. Conformance testing shall be performed in accordance with the manufacturers approved quality control manual. Geotextiles shall be randomly sampled in accordance with ASTM D 4354 (Procedure Method A). Factory seams shall be sampled at the frequency specified in ASTM D 4884.

### 2.2.2 Site Verification and Testing

Samples shall be collected at approved locations upon delivery to the site at the request of the Contracting Officer. Samples shall be tested to verify that the geotextile meets the requirements specified in TABLE 1, MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE. Samples shall be identified by manufacturers name, type of geotextile, lot number, roll number, and machine direction. Testing shall be performed at an approved laboratory. Test results from the lot under review shall be submitted and approved prior to deployment of that lot of geotextile. Rolls which are sampled shall be immediately rewrapped in their protective covering.

## PART 3 EXECUTION

### 3.1 SURFACE PREPARATION

Surface on which the geotextile will be placed shall be prepared to a relatively smooth surface condition, in accordance with the applicable portion of this specification and shall be free from obstruction, debris, depressions, erosion feature, or vegetation. Any irregularities will be removed so as to insure continuous, intimate contact of the geotextile with all the surface. Any loose material, soft or low density pockets of material, will be removed; erosion features such as rills, gullies etc. must be graded out of the surface before geotextile placement.

### 3.2 INSTALLATION OF THE GEOTEXTILE

#### 3.2.1 General

The geotextile shall be placed in the manner and at the locations shown. At the time of installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage.

#### 3.2.2 Placement

The geotextile shall be placed with the long dimension parallel to the slope or trench and laid smooth and free of tension, stress, folds, wrinkles, or creases. The strips shall be placed to provide a minimum width of 12 inches of overlap for each joint. Temporary pinning of the

geotextile to help hold it in place until the crushed stone or riprap is placed shall be allowed. The temporary pins shall be removed as the crushed stone or riprap is placed to relieve high tensile stress which may occur during placement of material on the geotextile. Design protection of riprap should be in compliance with EM 1110-2-1601. Trimming shall be performed in such a manner that the geotextile shall not be damaged in any way.

### 3.3 PROTECTION

The geotextile shall be protected at all times during construction from contamination by surface runoff and any geotextile so contaminated shall be removed and replaced with uncontaminated geotextile. Any damage to the geotextile during its installation or during placement of crushed stone or riprap shall be replaced by the Contractor at no cost to the Government. The work shall be scheduled so that the covering of the geotextile with a layer of the specified material is accomplished within 7 calendar days after placement of the geotextile. Failure to comply shall require replacement of geotextile. The geotextile shall be protected from damage prior to and during the placement of riprap or other materials by limiting the height of drop to less than 1 foot, by placing a cushioning layer of sand or gravel on top of the geotextile before placing the material, or other methods deemed necessary. Care should be taken to ensure that the utilized cushioning materials shall not impede the flow of water. Before placement of riprap or other materials, the Contractor shall demonstrate that the placement technique will not cause damage to the geotextile. In no case shall any type of equipment be allowed on the unprotected geotextile.

### 3.4 PLACEMENT OF CUSHIONING MATERIAL

Placing of cushioning material shall be performed in a manner to insure intimate contact of the geotextile with the prepared surface and with the cushioning material. The placement shall also be performed in a manner that shall not damage the geotextile including tear, puncture, or abrasion.

On sloping surfaces the cushioning material shall be placed from the bottom of the slopes upward. During placement, the height of the drop of riprap material shall not be greater than 12 inches. Any geotextile damaged beneath the cushioning material shall be uncovered as necessary and replaced at no cost to the Government.

### 3.5 OVERLAPPING AND SEAMING

#### 3.5.1 Overlapping

The overlap of geotextile rolls shall be a minimum of 12 inches. Appropriate measures will be taken to insure required overlap exists after cushion placement.

#### 3.5.2 Sewn Seams

High strength thread should be used such that seam test should conform to ASTM D 4884. The thread shall meet the chemical, ultraviolet, and physical requirements of the geotextile, and the color shall be different from that of the geotextile. The seam strength shall be equal to the strength required for the geotextile in the direction across the seam. Overlapping J-type seams are preferable over prayer-type seams as the overlapping geotextile reduces the chance of openings to occur at the seam. Double sewing shall be used specially for field seams to provide a safety factor

against undetected missed stitches.

-- End of Section --

## SECTION 02380A

## STONE, CHANNEL, SHORELINE/COASTAL PROTECTION FOR STRUCTURES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM C 127	(2001) Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C 136	(2001) Sieve Analysis of Fine and Coarse Aggregates
ASTM C 295	Standard Guide for Petrographic Examination of Aggregates for Concrete
ASTM D 1429	(1999) Standard Test Methods for Specific Gravity of Water and Brine
ASTM D 3370	(2003) Standard Practices for Sampling Water from Closed Conduits
ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D 4791	(1999) Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D 4992	(1994; R 2001) Evaluation of Rock to be Used for Erosion Control
ASTM D 5312	(1992; R 1997) Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions
ASTM D 5313	(1992; R 1997) Evaluation of Durability of Rock for Erosion Control Under Wetting and Drying Conditions
ASTM D 5519	(1994; R 2001) Particle Size Analysis of Natural and Man-Made Riprap Materials
ASTM D 75	(2003) Sampling Aggregates

ASTM E 548 (1994e1) General Criteria Used for  
Evaluating Laboratory Competence

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST HB 44 (2003) NIST Handbook 44: Specifications,  
Tolerances, and other Technical  
Requirements for Weighing and Measuring  
Devices

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 144 (1992) Standard Test Method for Resistance  
of Rock to Freezing and Thawing

COE CRD-C 148 (1969) Method of Testing Stone for  
Expansive Breakdown on Soaking in Ethylene  
Glycol

COE CRD-C 169 (1997) Standard Test Method for Resistance  
of Rock to Wetting and Drying

EM 1110-2-1906 (1970; R 1986) Laboratory Soils Testing

1.2 UNIT PRICES

1.2.1 Payment

Payment for materials furnished and installed under this Specification is included in the Lump Sum Price bid for the Contract. It will not be paid separately.

1.2.2 Measurement

Riprap will be measured for payment by the ton as determined by barge displacement where direct placement into structures(s) is practicable, or by weighing by the truckload on approved scales meeting the requirements of paragraph TRUCKLOAD.

a. Truckload. Each truck load will be weighed to the nearest 0.1 ton and the final quantity rounded to the nearest whole ton. Riprap will be measured for payment by weighing on approved scales before being placed in the work. Scales shall be of sufficient length to permit simultaneous weighing of all axle loads and shall have an accuracy within 0.2 percent throughout the range of scales. The scale's accuracy shall conform to the applicable requirements of NIST HB 44 and shall be certified by an inspector of the State Inspection Bureau charged with scales inspection within the state in which the project is located prior to weighing any riprap. The scales shall be capable of printing a weight ticket including time, date, truck number, and weight. Scales will be checked and certified before hauling riprap.

b. Barge Load

(1) If delivered by barge, riprap will be measured for payment by the Contracting Officer by weight determined by barge displacement. The Contractor shall furnish the Contracting Officer a barge displacement table not less than 10 work days prior to unloading the riprap from any barge. Each table submitted shall show the name and/or number of the barge owner,



the name of the fabricator, and the certification and date of certification of the person or firm preparing the table. The Contractor shall furnish with the barge displacement tables a drawing or sketch of each barge, dimensioned in sufficient detail to permit checking of the tables. The drawings shall show, as a minimum, the length, width, depth of the barge, and dimensions of the rake or rakes. Each such table shall have its accuracy certified by a person or firm, other than the Contractor, customarily performing the service. Each table submitted shall contain, in parallel columns, the freeboard of the barge in feet and tenths from zero to the full depth of the barge and the corresponding gross displacement to the nearest ton. Each barge shall be suitably marked with two displacement gaging locations on each side near each end of the barge. Each gaging location shall be marked by a line perpendicular to the edge of the barge, 4 inches wide and 1 foot long, on both the deck and side of the barge. Barges with rakes shall have the displacement gaging lines placed at each corner of the box section between the rakes. If a barge has a box end or ends, the gaging locations shall be placed approximately 4 feet from the box end(s). The freeboard will be measured at the four gaging locations and the displacement determined by the use of "STANDARD BARGE TABLES" from the average of these measurements. The displacement will be determined before and after being unloaded and the difference between these values shall be the quantity delivered. Barges shall be loaded so that the readings taken at the gaging locations do not vary more than 1.5 feet port to starboard fore and aft and do not vary more than 0.5 feet port to starboard. If such is not the case, the Contractor shall trim the carrier by shifting the stone until this limit is reached, before the measurement will be accepted. All carriers used in transporting stone shall be free of leaks such as would render accurate gauging difficult. Facilities for inspecting the hold at each carrier to determine whether leakage is occurring shall be provided. Each carrier shall also be provided with adequate pumping facilities, and if water is found to be accumulating in the hold, the carrier shall be pumped dry before each gaging, both before and after unloading. Lightening by pumping or by transfer of crew or supplies will not be permitted while stone is being transferred. Rejected riprap and unacceptable material shall be left aboard the barge until after the final readings have been taken.

(2) If barge tables are furnished for fresh water and if it is believed that barge displacement measurements made within the contract limits of the work are being taken in water that has salinity, the Contractor will have the option of obtaining water samples and determining densities or unit weights of these samples. These water samples shall be taken in accordance with ASTM D 3370 (Practice A - Grab Samples) at depths of 4 feet and 8 feet in the area where measurements are made. Water sampling shall be performed when the barges are measured for quantities, both when fully loaded and when empty. Water samples shall be taken by the Contractor and witnessed by the Contracting Officer with the use of "Polypro" 2000 ml water sampler, or equal. Densities shall be determined as specified in ASTM D 1429 (Method D - Hydrometer Method). Testing shall be done for the Contractor by a certified testing laboratory, and test results certified by the laboratory. After review and approval of the test results by the Contracting Officer, the average densities obtained at 4 feet and 8 feet will be used as the suitable salt water conversion

factor. In all calculations, the unit weight of 62.4 pounds per cubic foot will be used for fresh water.

c. Stockpiled Riprap. If the Contractor elects to stockpile riprap on the worksite or offsite, the riprap shall be weighed immediately before placement by either method described above. Riprap placed in temporary storage on the worksite as specified in paragraph WORKSITE STOCKPILE will not be required to be re-weighed prior to placement. If the barge displacement method is elected, a minimum of one-third the total maximum displacement of the barge is required on each barge.

#### 1.2.3 Unit of Measure

Unit of measure: ton.

#### 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

##### SD-03 Product Data

###### Riprap; G

Submit the source for materials used in riprap.

###### Gaging Table Data

Submit stone hauling vessel gaging tables.

##### SD-04 Samples

###### Stone; G

Submit suitable stone samples prior to delivery of any such material to the worksite if stone is not from one of the stone sources listed at the end of this section.

##### SD-06 Test Reports

###### Gradation Test; G

Submit the gradation tests using the GRADATION TEST DATA SHEET enclosed at end of this section for riprap or stone.

###### Evaluation Testing of Stone; G

Quality test on the stone in accordance with PART 2 paragraph EVALUATION TESTING OF STONE shall be the responsibility of the Contractor. Prior to delivery of such material to the worksite, submit a copy of the laboratory inspection report along with actions taken to correct deficiencies. Submit a copy of the test reports.

###### Bulk Specific Gravity

At least 30 calendar days in advance of shipment of stone to the work site, submit a copy of bulk specific gravity test results for each gradation range of stone proposed to be furnished. The information shall be furnished prior to preparation of pre-production demonstration stockpiles.

#### SD-07 Certificates

##### Riprap; G

Submit certificates of compliance attesting that the materials meet specification requirements.

##### Laboratory; G

Submit a copy of the documents, provided by the Materials Testing Center (MTC) at CEWES or other governmental agency, that validates that the laboratory can perform the required tests. The individual tests shall be listed for which the validation covers along with the date of the inspection.

##### Weigh Scale Certification; G

Submit a copy of the certification from the regulation agency attesting to the scale's accuracy.

##### Certified Weight Scale Tickets; G

Submit a copy of each certified weight scale ticket 1 working day after weighing.

#### 1.4 GOVERNMENT TESTING AND STUDIES

##### 1.4.1 Stone

##### 1.4.1.1 General

All stone shall be durable material as approved by the Contracting Officer. In case an unlisted source is to be used, the Contractor shall show that an adequate quantity of material is available and provide quality test data. Stone shall be of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. It shall be free from cracks, blast fractures, bedding, seams and other defects that would tend to increase its deterioration from natural causes. Inspections for cracks, fractures, seams and defects shall be made by visual examination. If, by visual examination, it is determined that 10 percent or more of the stone produced contains hairline cracks, then all stone produced by the means and measures which caused the fractures shall be rejected. A hairline crack that is defined as being detrimental shall have a minimum width of 4 mil and shall be continuous for one-third the dimension of at least two sides of the stone. The stone shall be clean and reasonably free from soil, quarry fines, and shall contain no refuse. The stone shall be clean and adequately free from all foreign matter. Any foreign material adhering to or combined with the stone as a result of stockpiling shall be removed prior to placement.

##### 1.4.1.2 Sources

- a. Selection of Source. The Contractor shall designate in writing

only one source or one combination of sources from which he proposes to furnish stone. It is the Contractor's responsibility to determine that the stone source or combination of sources selected is capable of providing the quality, quantities and gradation needed and at the rate needed to maintain the scheduled progress of the work. Samples for acceptance testing shall be provided in accordance with paragraph EVALUATION TESTING below. If a source for stone so designated by the Contractor is not accepted for use by the Contracting Officer, the Contractor may not propose other sources but shall furnish the stone from a source selected by the government at no additional cost to the Government.

b. Acceptance of Materials. Acceptance of a source of stone is not to be construed as acceptance of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials are unsuitable for stone as determined by the Contracting Officer. The Contracting Officer also reserves the right to reject individual units of produced specified materials in stockpiles at the quarry, all transfer points, and at the project construction site when such materials are determined to be unsuitable. During the course of the work, the stone may be tested by the Government, if the Contracting Officer determines that testing is necessary. If such tests are determined necessary, the testing will be done in the Government's testing laboratory or commercial laboratory selected by the Government. Materials produced from a listed or unlisted source shall meet all the requirements herein. The cost of testing will be at the Government's expense. During the contract period, both prior to and after materials are delivered to the job site, visual inspections and measurements of the stone materials may be performed by the Contracting Officer. If the Contracting Officer, during the inspections, finds that the stone quality, gradation or weights of stone being furnished are not as specified or are questionable, re-sampling and re-testing by the Contractor shall be required. Sampling of the delivered stone for testing and the manner in which the testing is to be performed shall be as directed by the Contracting Officer. This additional sampling and testing shall be performed at the Contractor's expense when test results indicate that the materials do not meet specified requirements. When test results indicate that materials meet specified requirements, an equitable adjustment in the contract price will be made for the sampling and testing. Any material rejected shall be removed or disposed of as specified and at the Contractor's expense.

#### 1.4.1.3 Evaluation Testing of Stone

The tests to which the stone may be subjected will include petrographic analysis, specific gravity, unit weight, absorption, wetting and drying, freezing and thawing and such other tests as may be considered necessary to demonstrate that the stone is of a satisfactory quality which is at least equivalent to stone from the sources listed at the end of this section.

#### 1.5 CONSTRUCTION TOLERANCES

The finished surface and stone layer thickness shall not deviate from the lines and grades shown by more than the tolerances listed below. Tolerances are measured perpendicular to the indicated neatlines. Extreme limits of the tolerances given shall not be continuous in any direction for more than five (5) times the nominal stone dimension nor for an area greater than 200 square feet of the structure surface.

## NEATLINE TOLERANCES

MATERIAL	ABOVE NEATLINE inches	BELOW NEATLINE inches
Riprap	6	0

The intention is that the work shall be built generally to the required elevations, slope and grade and that the outer surfaces shall be even and present a neat appearance. Placed material not meeting these limits shall be removed or reworked as directed by the Contracting Officer. Payment will not be made for excess material which the Contracting Officer permits to remain in place.

## 1.6 TERMINOLOGY

## 1.6.1 Riprap

Riprap is defined as a material having a gradation band similar to those specified in EM 1110-2-1601, Chapter 3, uniform graded material. Riprap is normally produced by mechanical methods, with a jaw crusher and grizzly after the stone has been mined by blasting in a quarry. Riprap gradations have a maximum top size of 100 lbs.

## PART 2 PRODUCTS

## 2.1 FILTER MATERIAL

Filter material shall consist of geotextile. Geotextiles shall be as specified in Section 02378A GEOTEXTILES USED AS FILTERS.

## 2.2 STONE

## 2.2.1 General

## 2.2.1.1 Evaluation Testing of Stone

Regardless of where the Contractor proposes to furnish stone from, the Contractor shall have evaluation tests performed on stone samples collected from the proposed source. The quarry investigation shall be performed by a registered geologist or registered engineer. The tests to which the stone shall be subjected include petrographic examination (ASTM C 295), bulk specific gravity (SSD), unit weight, absorption (ASTM C 127), resistance of stone to freezing and thawing (ASTM D 5312), and if argillaceous limestone and sandstone are used, resistance to wetting and drying (ASTM D 5313).

The laboratory to perform the required testing shall be validated based on compliance with ASTM E 548 and relevant paragraphs of ASTM D 3740, and no work requiring testing shall be permitted until the laboratory has been inspected and validated. The first inspection of the facilities shall be at the expense of the Government and any subsequent inspections required because of failure of the first inspection shall be at the expense of the Contractor.

- a. Samples. Information provided with the samples shall include the location within the quarry from which the sample was taken along with a field examination of the quarry. The field examination shall include the information outline in ASTM D 4992, paragraph 7. The samples shall

be shipped at the Contractor's expense to a laboratory validated by the government to perform the required tests.

b. Tests. The tests shall be conducted by the Contractor in accordance with applicable ASTM and Corps of Engineers methods of tests given in the Handbook for Concrete and Cement, and shall be performed at a laboratory validated by the government. The cost of testing shall be borne by the Contractor.

#### 2.2.1.2 Gradation Test

The Contractor shall perform a gradation test or tests on the riprap at the quarry in accordance with paragraph GRADATION TEST METHOD FOR RIPRAP.

#### 2.2.1.3 Proportional Dimension Limitations

The maximum aspect ratio (greatest dimension:least dimension) of any piece of stone for size ranges which are not graded with a screen or grizzly, shall be not greater than 3:1 when measured across mutually perpendicular axis. Not more than 25 percent (25%) of the stones within a gradation range shall have an aspect ratio greater than 2.5:1. A maximum of 10 percent flat and elongated pieces by weight will be acceptable. A flat and elongated piece of riprap is defined as having a ratio of width to thickness or length to width greater than 3:1. ASTM D 4791 shall be used as a guide to perform the test.

#### 2.2.1.4 Riprap Stockpile

Storage of riprap at the worksite is not to be confused with off-site stockpiling of riprap. If the Contractor elects to provide off-site stockpiling areas, the Contracting Officer shall be notified by the Contractor of all such areas. The Contractor's stockpile shall be a maximum of 12 feet high and formed by a series of layers of truckload dumps, where the rock essentially remains where it is placed. Subsequent layers shall be started 10 feet from the edge of the previous layer so that the rock will not roll down the edges of the previous layers. The first layer shall be a maximum of 6 feet high. After being stockpiled, any riprap which has become contaminated with soil or refuse shall not be put into the work unless the contaminating material has been removed from the riprap prior to placement.

a. Worksite Stockpile. Riprap delivered to the work sites, which requires temporary storage shall be placed in a container suitable for storing the riprap without waste, or a sand-clay-gravel or crushed stone pad may be constructed for the storage area and removed upon completion of the work. If the sand-clay-gravel or crushed stone pad method is used, the pad shall have a minimum thickness of at least 6 inches. The container or sand-clay-gravel or crushed stone pad method shall be subject to approval prior to delivery of the riprap. Upon completion of the work, the storage areas shall be cleaned of all storage residues and returned to their natural condition.

b. Off-site Stockpile. In areas where riprap is stockpiled for placement, the area shall have excess rock removed prior to completion of work. All rock and spalls greater than 3 inches in diameter shall be removed. Where rocks may have become buried due to soft ground or operation of the equipment, the rock shall be disposed of as directed. After the rock has been removed, the

storage area shall be graded, dressed, and filled to return the ground surface as near as practical to the condition that existed prior to construction.

### 2.2.2 Riprap

Only quarried stone shall be used. Riprap quality shall be as specified in paragraph GOVERNMENT TESTING AND STUDIES, subparagraph STONE. Riprap stone shall be sound and durable quality to insure permanence in the structure and in the climate in which it is to be used. The armor stone shall be free from cracks, seams and other defects that would tend to increase unduly its deterioration from natural causes. The inclusion of objectionable quantities of dirt, sand, clay and rock fines shall not be permitted. Riprap stone shall be roughly angular in shape of which the least dimension shall not be less than within a weight range of 45-80 pounds with at least 50% of the stone weighing 65 pounds or more.

## PART 3 EXECUTION

### 3.1 BASE PREPARATION

Areas on which riprap is to be placed shall be graded and/or dressed to conform to cross sections shown on the contract drawings within an allowable tolerance of plus 2 inches and minus 2 inches from the theoretical slope lines and grades. The prepared base shall be approved by the Contracting Officer. Where such areas are below the allowable minus tolerance limit they shall be brought to grade by fill with earth similar to the adjacent material and then compacted to a density equal to the adjacent in place material. No payment will be made for any material thus required. Immediately prior to placing the bedding layers, the prepared base will be inspected by the Contracting Officer and no material shall be placed thereon until that area has been approved.

### 3.2 PLACEMENT OF FILTER LAYERS

#### 3.2.1 General

Filter layers, composed of geotextile shall be placed on the prepared base as described below, in accordance with the details shown on the contract drawings, and within the limits either shown on the contract drawings or staked in the field.

A tolerance of plus 2 inches and minus 2 inches from the slope lines and grades shown on the contract drawings will be allowed in the finished surface of the filter layers, except that the extreme of this tolerance shall not be continuous over an area greater than 200 square feet.

#### 3.2.2 Geotextile

Installation of geotextile shall be as specified in Section 02378A GEOTEXTILES.

### 3.3 PLACEMENT OF RIPRAP

#### 3.3.1 General

Riprap shall be placed on the geotextile specified in paragraph GEOTEXTILE within the limits shown on the contract drawings.

### 3.3.2 Placement

Riprap shall be placed in a manner which will produce a well-graded mass of rock with the minimum practicable percentage of voids, and shall be constructed, within the specified tolerances, to the lines and grades shown on the contract drawings or staked in the field. A tolerance of plus 6 inches and minus 0 inches from the slope lines and grades shown on the contract drawings will be allowed in the finished surface of the riprap, except that the extreme of this tolerance shall not be continuous over an area greater than 200 square feet. The average tolerance of the entire job shall have no more than 50 percent of the tolerances specified above. Riprap shall be placed by means of truck, crane operated skip-pan (box), dragline bucket, clamshell, rock-bucket, hydraulic excavator ("Gradall"), trackhoe, or other approved equipment. Pneumatic tired front end loaders may be used provided that in the opinion of the Contracting Officer no degradation of the rock occurs. Riprap shall be placed to its full course thickness in one operation and in such manner as to avoid displacing the filter material. The large stones shall be well distributed and the entire mass of stones in their final position shall be graded to conform to the gradation specified in paragraph RIPRAP, subparagraph GENERAL. Placement shall begin at the bottom of the area to be covered and continue up slope. Subsequent loads of material shall be placed against previously placed material in such a manner as to ensure a relatively homogenous mass. The finished riprap shall be free from objectionable pockets of small stones and clusters of larger stones. Placing riprap in layers will not be permitted. Placing riprap by dumping it into chutes, or by similar methods likely to cause segregation of the various sizes, shall not be permitted. Placing riprap by dumping it at the top of the slope and pushing it down the slope shall not be permitted. No equipment shall be operated directly on the completed stone protection system. The desired distribution of the various sizes of stones throughout the mass shall be obtained by selective loading of the material at the quarry or other source; by controlled dumping of successive loads during final placing; or by other methods of placement which will produce the specified results. Each truckload shall be representative of the gradation requirements. Rearranging of individual stones shall be required to the extent necessary to obtain a well-graded distribution of stone sizes as specified above. However, manipulating stone by means of dozers or other blade equipment shall not be permitted. The Contractor shall maintain the stone protection until accepted by the Contracting Officer and any material displaced prior to acceptance and due to the Contractor's negligence shall be replaced at his expense and to the lines and grades shown on the contract drawings.

## 3.4 TESTS AND INSPECTIONS

### 3.4.1 Placement Control

The Contractor shall establish and maintain quality control for all work performed at the job site under this section to assure compliance with contract requirements. He shall maintain records of his quality control tests, inspections and corrective actions. Quality control measures shall cover all construction operations including, but not limited to, the placement of all materials to the slope and grade lines shown and in accordance with this section.

#### 3.4.1.1 Check Surveys

Surveys made by the Contractor are required on each material placed for determining that the materials are acceptably placed in the work. The



Contractor shall make checks as the work progresses to verify lines, grades and thicknesses established for completed work. At least one (1) check survey as specified below shall be made by the Contractor for each twenty-five (25) foot section as shown as practicable after completion. Following placement of each type of material, the cross section of each step of the work shall be approved by the Contracting Officer before proceeding with the next step of the work. Approval of cross sections based upon check surveys shall not constitute final acceptance of the work.

Cross sections shall be taken by the Contractor on lines 25 feet apart, measured along the structure reference line, with readings at 5-foot intervals and at beaks along the lines. However, other cross section spacing and reading intervals may be used if determined appropriate by the Contracting Officer. Additional elevations and soundings shall be taken as the Contracting Officer may deem necessary or advisable. The surveys shall be conducted in the presence of an authorized representative of the Contracting Officer, unless this requirement is waived by the Contracting Officer.

#### 3.4.1.2 Reporting

Reporting shall be in accordance with paragraph GRADATION TEST.

#### 3.4.2 Gradation Tests for Stone

##### 3.4.2.1 Gradation Test Method for Riprap

Gradation tests shall be performed in accordance with ASTM D 5519, Test Method A.

##### 3.23.11.2 Standard Test Method for Gradation of Riprap

- a. Select a representative sample (Note No. 1), weigh and dump on hard stand.
- b. Select specific sizes (see example) on which to run "individual weight larger than" test. (See Note No. 2). Procedure is similar to the standard aggregate gradation test for "individual weight retained".
- c. Determine the largest size stone in the sample. (100 percent size)
- d. Separate by "size larger than" the selected weights, starting with the larger sizes. Use reference stones, with identified weights, for visual comparison in separating the obviously "larger than" stones. Stones that appear close to the specific weight must be individually weighed to determine size grouping. Weigh each size group, either individually or cumulatively.
- e. Paragraph d above will result in "individual weight retained" figures. Calculate individual percent retained (heavier than), cumulative percent retained, and cumulative percent passing (lighter than). Plot percent passing, along with the specification curve on ENG Form 4794-R.

NOTE NO. 1: Sample Selection: The most important part of the test and the least precise is the selection of a representative sample. No "standard" can be devised; larger quarry run stone is best sampled at the shot or stockpile by given direction to the loader; small graded stone is best sampled by random selection from the transporting vehicles. If possible, all parties should

take part in the sample selection and agree before the sample is run that the sample is representative.

NOTE NO. 2: Selection of Size for Separation: It is quite possible and accurate to run a gradation using any convenient sizes for the separation, without reference to the specifications.

After the test is plotted on a curve, then the gradation limits may be plotted. Overlapping gradations with this method are no problem. However, it is usually more convenient to select points from the gradation limits, such as the minimum 50 percent size, the minimum 15 percent size, and one or two others, as separation points. For these types of stone gradations the separation points need to be selected as the smallest size stone at each break in the gradation specified.

## F O R

## E X A M P L E

## O N L Y

EXAMPLE GRADATION  
SPECIFICATIONS

PERCENT LIGHTER BY WEIGHT	STONE WEIGHT IN LBS.
100	400 - 160
50	160 - 80
15	80 - 30

## EXAMPLE WORKSHEET

STONE SIZE LBS.	INDIVIDUAL WT. RETAINED	INDIVIDUAL PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
400	0	0	0	100
160	9,600	30	30	70
80	11,200	35	65	35
30	8,000	25	90	10
<30	3,200	10	100	-

TOTAL 32,000 pounds

NOTE: Largest stone 251 pounds

G R A D A T I O N      T E S T      D A T A      S H E E T

Quarry \_\_\_\_\_ Type of  
Stone Tested \_\_\_\_\_

Date of Test \_\_\_\_\_ Testing Rate \_\_\_\_\_

T E S T                      R E P R E S E N T S

Contract No.

District

Tons

	TOTAL	

G R A D A T I O N

Stone Size  
(lbs)

Weight  
Retained

Individual  
% Retained

Cumulative	
% Ret.	% Pass

Specification  
% Finer by wt

Total Weight					
Max Size Stone =					

Remarks:

I certify that the above stone sample is representative of the total tonnage covered by this test report.

Contractor Representative	
Government Representative	

-- End of Section --

## SECTION 02457

## POLY VINYL CHLORIDE (PVC) SHEET PILES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM D 4216	Rigid Poly Vinyl Chloride (PVC) and Related Plastic Building Products Compounds
ASTM D 4226	Standard Test Methods for Impact Resistance of Rigid Poly(Vinyl Chloride) (PVC) Building Products

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-02 Shop Drawings

## PVC Sheet Piling; G

Detail drawings. Sheet piling, including fabricated sections, shall show complete piling dimensions and details, driving sequence and location of installed piling. Detail drawings shall include details and dimensions of templates and other temporary guide structures for installing piling. Detail drawings shall provide details of the method of handling piling to prevent permanent deflection, distortion or damage to piling interlocks.

## SD-03 Product Data

## Driving

Records of the completed sheet piling driving operations. These records shall provide a system of identification which shows the disposition of approved piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom elevations of installed piling.

## Pile Driving Equipment; G

Complete descriptions of sheet piling driving equipment including hammers, extractors, protection caps and other installation appurtenances, prior to commencement of work.

#### Pulling and Redriving; G

The proposed method of pulling sheet piling, prior to pulling any piling.

#### Interlocked Joint Strength in Tension Test; G

The procedure for testing sheet piling interlocked joint strength in tension, prior to testing piling.

### SD-06 Test Reports

#### Materials Tests

Certified materials tests reports. Reports showing that sheet piling and appurtenant materials meet the specified requirements shall be submitted for each shipment and identified with specific lots prior to installing materials.

#### Vibration Monitoring; G

### 1.3 DELIVERY, STORAGE AND HANDLING

Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be provided on the sheet piling as required by the referenced specifications. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks. Storage of sheet piling should also facilitate required inspection activities.

## PART 2 PRODUCTS

### 2.1 PVC SHEET PILING

#### 2.1.1 Material Requirements

The interlock of sheet piling shall be free-sliding, allow a swing angle of 15 degrees when threaded and maintain continuous interlocking when installed. Sheet piling shall include special sections of required length of the dimensions shown. Fabricated sections shall conform to the requirements herein and the piling manufacturer's recommendations for fabricated sections. All sheet piling used must be from the same manufacturer unless approved by the Contracting Officer prior to installation.

#### 2.1.2 Manufacturer's Service

Manufacturer must have a minimum of 20,000,000 square feet of sheet piling in service.

#### 2.1.3 Service Inspection

Manufacturer's sheet piling service must have been inspected by a third party for a minimum performance of 10 years.

## 2.2 MATERIAL QUALITY AND PERFORMANCE

### 2.2.1 Vinyl Quality

The sheet piling shall be manufactured entirely from rigid, impact modified, UV-inhibited, weatherable vinyl that meets or exceeds the characteristics listed in this specification.

### 2.2.2 Material Chemistry

The sheet piling material must meet a cell classification of 1-41444-33-0101 as defined by ASTM D 4216 which includes specific requirements and thresholds for:

- a. Chemistry of Compound
- b. Impact Resistance
- c. Mechanical Properties
- d. Weatherability, UV Resistance, and their effect on mechanical properties.

### 2.2.3 Exposure

All sheet piling surfaces that may in any way be exposed to outdoor elements such as ultraviolet light and/or rain, or exposed to any chemical attack must be completely composed of virgin material to a minimum thickness of 0.01 inches.

### 2.2.4 Virgin Material

Virgin material, as required by this specification, must be wholly supplied and certified as to its consistency and performance with a certificate of analysis.

### 2.2.5 Reprocessed Material Manufacturing

The sheet piling can be manufactured with reprocessed materials only if all of the materials meet a cell classification or 1-41432-33-0000 as defined by ASTM D 4216 and are processed in combination with a molecularly bonded, rigid, impact-modified, UV-inhibited, weatherable virgin vinyl capstock that meets or exceeds the performance criteria listed in this specification and meets a cell classification of 1-41444-33-0101 as defined by ASTM D 4216.

## 2.3 WORKMANSHIP, FINISH, COLOR AND APPEARANCE

### 2.3.1 Appearance

The sheet piling shall be free from visible cracks, flaws, or other injurious defects.

### 2.3.2 Color

The sheet piling color shall be gray.

### 2.3.3 Finish

All exposed surfaces of sheet piling shall be UV resistant and colorfast as per cell classification 1-41444-33-0101 as defined by ASTM D 4216 and comprised of virgin material, wholly supplied and certified as to its consistency and performance with a certificate of analysis.

#### 2.3.4 Color Change

Initial color consistency of the sheet piling must be such that from sheet to sheet and shipment to shipment over a manufacturing date of three years, change in color is less than what is reasonably discernable by the human eye or more measurably a color difference ( $\Delta E$ ) of 2.0 or less.

### 2.4 STRUCTURAL PERFORMANCE

#### 2.4.1 Bending Moment

All sheet piling must perform to a minimum long-term allowable bending moment of 15,733 ft-lbs/ft as confirmed and calculated by full section 3-point bend testing and within a factor of safety of 2, using  $[M_{max} = P_{ult} * L / 4]$  where "P<sub>ult</sub>" is the ultimate test load and "L" is the test span.

#### 2.4.2 Bending Stiffness

The minimum effective bending stiffness of all sheet piling must be such that  $[EI = 132,000,000 \text{ square inch-lbs/ft}]$  as confirmed and calculated by full section 3-point bend testing results, using  $[EI = P * L^3 / (48 * \Delta_{max})]$  where "P" is the ultimate test load, " $\Delta_{max}$ " is the maximum test deflection and "L" is the test span.

#### 2.4.3 Impact Strength

The minimum impact strength of all sheet piling must be 17,500 in-lbs/square inch as confirmed by full section testing results using ASTM D 4226 Procedure B.

#### 2.4.4 Ductility

The minimum ductility required for all sheet piling will be dictated by a minimum ultimate strain of 1.5% as confirmed and calculated by full section 3-point bend testing results, using  $[\text{strain}_{ult} = P_{ult} * L * c / (4EI)]$  where " $\text{strain}_{ult}$ " is the ultimate strain, "P<sub>ult</sub>" is the ultimate test load, "L" is the test span, "c" is the distance from the neutral axis to the outer fiber, and "EI" is the effective bending stiffness as defined in Section 2.5.2.

### 2.5 INSTALLATION PERFORMANCE AND DRIVEABILITY

#### 2.5.1 Impact Strength

The minimum impact strength of all sheet piling must be 17,500 in-lbs/square inch as confirmed by full section testing results using ASTM D 4226 Procedure B.

#### 2.5.2 Bending Stiffness

The minimum effective bending stiffness of all sheet piling must be such that a driving set of 2 sheets has  $[EI = 264,000,000 \text{ square inch-lbs}]$  as confirmed and calculated by full section 3-point bend testing results, using  $[EI = P * L^3 / (48 * \Delta_{max})]$  where "P" is the ultimate test load, " $\Delta_{max}$ " is the maximum test deflection and "L" is the test span.



## 2.6 TESTS, INSPECTIONS, AND VERIFICATIONS

### 2.6.1 Materials Tests

Materials tests shall conform to the following requirements. Sheet piling and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site. Testing of sheet piling for mechanical properties shall be performed after the completion of all rolling and forming operations. Testing of sheet piling shall meet the requirements of ASTM D 4216.

## PART 3 EXECUTION

### 3.1 INSTALLATION

#### 3.1.1 Pile Driving Equipment

Pile driving equipment shall conform to the following requirements.

##### 3.1.1.1 Driving Hammers

Use a pile hammer having a delivered force or energy suitable for the total weight of the pile and the character of subsurface material to be encountered. Operate hammer at the rate(s) recommended by the manufacturer throughout the entire driving periods so that no damage to piling occurs by the use of a pile hammer with excess delivered force or energy.

#### 3.1.2 Placing and Driving

##### 3.1.2.1 Placing

Any excavation required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. Pilings shall be carefully located as shown on the drawing set. Pilings shall be placed plumb with out-of-plumbness not exceeding 1/8 inch per foot of length and true to line. Temporary wales, templates, or guide structures shall be provided to insure that the pilings are placed and driven to the correct alignment. At least two templates shall be used in placing each piling and the maximum spacing of templates shall not exceed 20 feet. Pilings properly placed and driven shall be interlocked throughout their length with adjacent pilings to form a continuous diaphragm throughout the length or run of piling wall.

##### 3.1.2.2 Driving

Maintain piling vertical during driving. Drive piles in such a manner as to prevent damage to the piles and to provide a continuous closure. Where possible, drive Z-pile with the ball end leading. If an open socket is leading, a bolt or similar object placed in the bottom of the interlock will minimize packing material into it and ease driving for the next sheet. Incrementally sequence driving of individual piles such that the tip of any sheet pile shall not be more than 4 feet below that of any adjacent sheet pile. When the penetration resistance exceeds five blows per inch, the tip of any sheet pile shall not be more than 2 feet below any adjacent sheet pile.

### 3.1.3 Cutting-Off

Pilings driven to refusal or to the point where additional penetration cannot be attained and are extending above the required top elevation in excess of the specified tolerance shall be cut off to the required elevation. Pilings driven below the required top elevation and pilings shall be removed and new piling driven.

a. The tops of pilings excessively battered during driving shall be trimmed when directed at no cost to the Government. Piling cut-offs shall become the property of the Contractor and shall be removed from the site.

b. The Contractor shall cut holes in pilings for bolts, rods, drains or utilities as shown or as directed. All cutting shall be done in a neat and workmanlike manner. A straight edge shall be used in cuts made by burning to avoid abrupt nicks. Holes other than bolt holes shall be reasonably smooth and the proper size for rods and other items to be inserted.

### 3.1.4 Inspection of Driven Piling

The Contractor shall inspect the interlocked joints of driven pilings extending above ground. Pilings found to be out of interlock shall be removed and replaced at the Contractor's expense.

### 3.1.5 Pulling and Redriving

In the pulling and redriving of piles as directed, the Contractor shall pull selected pilings after driving to determine the condition of the underground portions of pilings. Any piling so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed and replaced at the Contractor's expense. Pilings pulled and found to be in satisfactory condition shall be redriven when directed.

## 3.2 REMOVAL

### 3.2.1 Pulling

The method of pulling piling must be approved by the Contracting Officer. Pulling holes shall be provided in pilings as required. Extractors shall be of suitable type and size. Care shall be exercised during pulling of pilings to avoid damaging piling interlocks and adjacent construction. If the Contracting Officer determines that adjacent permanent construction has been damaged during pulling the Contractor will be required to repair this construction at no cost to the Government. Pilings shall be pulled one sheet at a time. Pilings fused together shall be separated prior to pulling unless the Contractor demonstrates to the satisfaction of the Contracting Officer that the pilings cannot be separated. The Contractor will not be paid for the removal of pilings damaged beyond structural use due to proper care not being exercised during pulling.

-- End of Section --

## SECTION 02491

## HELICAL TIEBACK ANCHORS

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM A 29/A 29M	Steel Bars, Carbon and Alloy, Hot-Wrought and Cold Finished
ASTM A 36/A 36M	(2003a) Carbon Structural Steel
ASTM A 53/A 53M	(2002) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A 153	Zinc Coating (Hot Dip) on Iron and Steel Hardware
ASTM A 252	Welded and Seamless Steel Pipe Piles
ASTM A 775	Electrostatic Epoxy Coating
ASTM A 193/A 193M	Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service
ASTM A 320/A 320M	Alloy-Steel Bolting Materials for Low Temperature Service
ASTM A 500	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A 572/A 572M	(2003a) High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A 656	Hot-Rolled Structural Steel, High-Strength Low-Alloy Plate with Improved Formability
ASTM A 1018	Steel, Sheet and Strip, Heavy Thickness Coils, Hot Rolled, Carbon, Structural, High-Strength Low-Alloy, Columbium or Vanadium, and High-Strength Low-Alloy with Improved Formability
ASTM D 1784	(2003) Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

ASTM D 1785	(1999) Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D 3034	Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D 3689	Method of Testing Individual Piles Under Static Axial Tensile Load

## AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 20-96	Standard Guidelines for the Design and Installation of Pile Foundations
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## ASSOCIATION OF DRILLED SHAFT CONTRACTORS (ADSC)

GEC No. 4	Ground Anchors and Anchored Systems
	ADSC Mechanical Anchor Product Data

## POST-TENSIONING INSTITUTE (PTI)

PTI Post Ten Man	(Nov 1990, Fifth Edition) Post Tensioning Manual
PTI Rec	(June 1996, Third Edition) Recommendations for Prestressed Rock and Soil Anchors
PTI Spec	(Dec 2000, Second Edition) Specification for Unbonded Single Strand Tendons

## SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J429	Mechanical and Material Requirements for Externally Threaded Fasteners
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## 1.2 DEFINITIONS

Alignment Load (AL) - A nominal load applied to a ground anchor during testing to keep the testing equipment correctly positioned and remove any slack in the reaction system. Alignment load is typically 10%-15% DL.

Bearing Stratum - Soil layer(s) of sufficient strength capable of resisting the applied axial load transferred by the helical tieback.

Contractor - The person/firm responsible for performing the helical tieback anchor work.

Coupling - Central steel shaft connection means formed as integral part of the plain extension shaft material. For SS anchors, couplings shall be hot upset forged sockets.

Creep - The movement that occurs during the creep test of a ground anchor under a constant load.

Design Load (DL) - Maximum anticipated service load applied to the ground anchor. Also known as the working load (WL).

Elastic Movement - The recoverable movement measured during a ground anchor test resulting from the elastic elongation of the tieback material or soils.

Free Length - Length of plain extension acting as a tendon, which is free to elongate elastically. A.k.a. un-bonded length or stressing length. Helix plates shall not be located in free length section of tieback. Minimum free length shall be specified on a project specific basis.

Ground Anchor - A.k.a. tieback or anchor, used to transfer tensile loads to soil. Ground anchors consist of central steel shaft, helix bearing plates, coatings, corrosion protection, connection means, etc.

Helical Extension - Helical tieback anchor component installed immediately following the lead section, if required. This component consists of one or more helix plates welded to a central steel shaft of finite length.

Helix Plate - Generally round steel plate formed into a ramped spiral. The helical shape provides the means to install the helical tieback anchor, plus the plate transfers load to soil in end-bearing. Helix plates are available in various diameters and thicknesses.

Lead Section - The first helical tieback anchor component installed into the soil, consisting of single or multiple helix plates welded to a central steel shaft. Helix plates provide end-bearing capacity.

Lock-Off Load - The stressing force in ground anchor after load has been transferred from the hydraulic jack to the bearing plate and nut. A.k.a. the transfer load.

Net Settlement - The non-elastic (non-recoverable) movement of a ground anchor measured during load testing.

Overburden - Non-lithic material, natural or placed, typically of soft consistency or loose relative density, which overlies competent load bearing stratum.

Performance Test - Similar to a Proof Test except a cyclic loading method is used to analyze total, elastic, and net movement of the ground anchor. Often used for pre-contract or pre-production load tests, in addition to a specified percentage of production anchors.

Plain Extension - Central steel shaft of finite length without helix plates. It is installed following the installation of the lead section or helical extension (if used). The units are connected with integral couplings and bolts. Plain extensions are used to extend the helix plates beyond the specified minimum free length and into competent load bearing stratum.

Proof Test - Incremental loading of a ground anchor, holding for a period of time, and recording the total movement at each load increment.

Safety Factor - The ratio of the ultimate capacity to the working or design load used for the design of any structural element.

Helical Tieback Anchor - A helical tieback anchor is a bearing type foundation consisting of a lead section, helical extension (if so required by site conditions), plain extension section(s), and a wall connection.

Test Load (TL) - The maximum load applied to the ground anchor during testing.

Thread Bar Adapter - Section of central steel shaft used to connect the

ground anchor to the wall face via a high tensile strength pre-stressing thread bar.

Working Load (WL) - Equivalent term for Design Load.

Ultimate Capacity (UC) - Limit state based on the structural and/or geotechnical capacity of the ground anchor defined as the point at which no additional capacity can be justified.

### 1.3 SYSTEM DESCRIPTION

#### 1.3.1 General

The work consists of furnishing all necessary engineering and design services, supervision, labor tools, materials, and equipment to perform all work necessary to install the HELICAL TIEBACK ANCHORS per the specifications described herein, and as shown on the drawings. The Contractor shall install a helical anchor that will develop the load capacities as detailed on the drawings. This may also include provisions for load testing to verify tieback capacity and deflection, if part of the scope of work.

### 1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

#### SD-01 Preconstruction Submittals

##### Working Drawings and Shop Drawings; G

The Contractor shall prepare and submit working drawings and shop drawings for the helical tieback anchor intended for use and all anchor components and anchorage details at least 30 calendar days prior to planned start of construction. All drawings shall be signed and sealed by a Registered Professional Engineer currently licensed in the State/Province of work.

Designer Qualifications; G

Fabricator Qualifications; G

Installer Qualifications; G

Core Logging and Soil Sampling Qualifications; G

The qualifications and experience records shall be submitted for approval. Experience records shall identify all the individuals responsible for the anchors and shall include a listing of projects of similar scope performed within the specified period along with points of contact. The Contractor shall submit the qualifications prior to the installation of any anchors specified in this section.

##### Installation Plan; G

The Contractor shall submit to the Contracting Officer for review and comment a plan for installing the soil anchors. The proposal shall describe the sequence for installation and other restrictions as outlined on the drawings or specified. The anchor

and casing installation procedures shall be determined by the Contractor as part of the anchor design. The installation plan shall also include descriptions of methods and equipment to be used by the Contractor for alignment checking of anchor holes and casings.

#### SD-05 Design Data

##### Design Computations; G

The Contractor shall prepare and submit design calculations for the helical tieback anchor intended for use at least 30 calendar days prior to planned start of construction.

##### Anchor Design; G

The Contractor shall furnish a design schedule for the anchors which includes the following:

- a. Anchor number, location and pattern.
- b. Anchor design load.
- c. Type and size of central steel shaft.
- d. Helix configuration (number and diameter of helix plates).
- e. Minimum effective installation torque.
- f. Minimum overall length
- g. Inclination of ground anchor.
- h. Type and size of thread bar.

The design schedule shall be submitted at least 30 days prior to commencement of work on the anchors covered by the schedule.

#### SD-06 Test Reports

##### Field Test Reports

The Contractor shall provide copies of field test reports within 24 hours after completion of the load tests. Records shall be prepared in accordance with the specified division of responsibilities. Formal copies shall be submitted within a reasonable amount of time following test completion. These test reports shall include, but are not limited to: name of project and Contractor, name of Contractor's supervisor during installation, name of third party test agency (if required), date time and duration of test, location of ground anchor by assigned identification number, type of test (performance, proof), description of calibrated testing equipment and test set-up, actual helical tieback anchor type and configuration - including lead section, number and type of extension sections (manufacturer's SKU numbers), steps and duration of each load increment, cumulative anchor-head movement at each load step, comments pertaining to test procedure/equipment adjustments/or other relevant information, and signature by third party test agency rep and registered professional engineer.

#### SD-07 Certificates

##### Central Steel Shaft

Certified mill test reports for the central steel shaft shall be submitted with materials delivered to the site. The ultimate yield strength, yield strength, % elongation, and chemistry composition shall be provided.

#### Anchor Load Testing

Plans for production testing for the helical tieback anchors shall be submitted prior to beginning load tests. The purpose of the test is to determine the load versus displacement response of the helical tieback anchor and provide an estimation of ultimate capacity.

#### Load Test Equipment

The Contractor shall submit copies of calibration reports for each torque indicator and all load test equipment to be used on the project. The calibration tests shall have been performed within forty five (45) working days of the date submitted. Helical tieback anchor installation and testing shall not proceed until the calibration reports have been received. These calibration reports shall include, but are not limited to: name of project and Contractor, name of testing agency, identification (serial number) of device calibrated, description of calibrate testing equipment, date of calibration, and calibration data.

#### SD-11, Closeout Submittals

##### Warranty Documents

A 'Project Warranty' and a 'Manufacturer's Warranty' shall be submitted by the Contractor. Any additional warranty provided by the Contractor shall be issued as an addendum to this specification.

##### Installation Records

The Contractor shall provide copies of helical tieback anchor installation records within 24 hours after each installation is completed. Formal copies shall be submitted on a weekly basis. These installation records shall include, but are not limited to: name of project and Contractor, name of Contractor's supervisor during installation, date and time of installation, name and model of installation equipment, type of torque indicator used, location of ground anchor by assigned identification number, elevation of anchorage, actual helical tieback anchor type and configuration - including lead section (number and size of helix plates), number and type of extension sections (manufacturer's SKU numbers, helical tieback anchor installation duration and observations, total length of installed ground anchor, inclination of ground anchor, installation torque at one-foot intervals for the final 10 feet, comments pertaining to interruptions or obstructions, and rated load capacities.

#### 1.5 QUALIFICATIONS

Anchor designer, fabricator and installer qualifications shall be submitted for approval in accordance with paragraph SUBMITTALS. The submittals shall, where applicable, identify individuals who will be working on this



contract and their relevant experience. No changes shall be made in approved personnel without prior approval of the Contracting Officer.

#### 1.5.1 Designer Qualifications

The anchors shall be designed by Professional Engineers who have designed helical tieback anchor projects similar in size and scope to this project within the past ten years. Design of helical tieback anchors shall be performed as an entity as required in accordance with existing local code requirements or established local practices. This design work may be performed by a licensed Professional Engineer or designer depending upon local requirements or practices.

#### 1.5.2 Fabricator Qualifications

The anchors shall be fabricated by a manufacturer that has been in the practice of designing and fabricating helical tieback anchors similar in size and scope to this project for at least ten years. Anchor components as specified herein shall be manufactured by a facility whose quality systems comply with ISO (International Organization of Standards) 9001 requirements. Certificates of Registration denoting ISO Standards Number shall be presented upon request.

#### 1.5.3 Installer Qualifications

The anchors shall be installed by an authorized firm which is regularly engaged in the installation of helical tieback anchors and has at least ten years experience in the installation of similar anchors. The superintendent shall have installed anchors on at least five projects of similar scope and size.

#### 1.5.4 Core Logging and Soil Sampling Qualifications

Logging of core and preparation of drilling logs and records shall be performed by a Registered Geologist or Geotechnical Engineer who has at least five years experience in identifying and logging rock core and soil samples.

#### 1.6 PREPARATORY MEETING

Prior to commencing any work on the anchors, the Contractor, including all field personnel to be involved in drilling and installation of the anchors, shall meet with representatives of the Contracting Officer to review the plans and specifications, work plans, and submittals. Drilling may commence upon approval of the anchor installation plan and procedures described in paragraph SUBMITTALS and after the conduct of the Preparatory Meeting.

#### 1.7 DELIVERY, STORAGE AND HANDLING

Materials shall be suitably wrapped, packaged or covered at the factory or shop to prevent being affected by dirt, water, oil, grease, and rust. Materials shall be protected against abrasion or damage during shipment and handling. Materials stored at the site shall be placed above ground on a well supported platform and covered with plastic or other approved material. Materials shall be protected from adjacent construction operations. Grounding of welding leads to prestressing steel shall not be permitted. Prestressing steel which is damaged by abrasion, cuts, nicks, heavy corrosions, pitting, welds or weld spatter shall be rejected and

removed from the site. Steel shafts shall be inspected prior to insertion into anchor holes for damage to corrosion protection. Any such damage shall be repaired in a manner recommended by the tendon manufacturer and approved by the Contracting Officer.

## 1.8 SITE CONDITIONS

A foundation investigation has been made at the site and data is presented on the foundation exploration drawings. Logs of core borings are shown on the drawings. While the foundation information is representative of subsurface conditions at the respective locations, local variations in the characteristics of the subsurface materials may be anticipated. Local variations which may be encountered include, but are not limited to, classification and thickness of rock strata, fractures, and other discontinuities in the rock structure, and variation in the soil classifications. Such variations will not be considered as differing materially within the purview of the CONTRACT CLAUSES, paragraph Differing Site Conditions. Core from the borings indicated on the drawings are available for inspection as specified in the SPECIAL CONTRACT REQUIREMENTS, paragraph Physical Data. The Contractor is responsible for verifying the location of all utilities that may be affected by construction or the installation of the anchors.

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Central Steel Shaft

The central steel shaft, consisting of lead sections, helical extensions, and plain extensions, shall be Type SS.

##### 2.1.1.1 SS5 1-1/2" Material

Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting dimensional and workmanship requirements of ASTM A 29/A 29M. The bar shall be modified medium carbon steel grade with improved strength due to fine grain size.

Torsional Strength Rating = 5,500 ft-lb  
Minimum Yield Strength = 70 ksi

##### 2.1.1.2 SS150 1-1/2"; SS175 1-3/4"; SS200 2"; SS225 2-1/4" Material

Shall be hot rolled Round-Cornered-Square (RCS) solid steel bars meeting the dimensional and workmanship requirements of ASTM A 29/A 29M. The bar shall be High Strength Low Alloy (HSLA), low to medium carbon steel grade with improved strength due to fine grain size.

Torsional Strength Rating: SS150 = 7,000 ft-lb; SS175 = 10,000 ft-lb; SS200 = 15,000 ft-lb; SS225 = 20,000 ft-lb  
Minimum Yield Strength = 90 ksi

#### 2.1.2 Helix Bearing Plate

The helix bearing plate shall be hot rolled carbon steel sheet, strip or plate formed on matching metal dies to true helical shape and uniform pitch.

#### 2.1.2.1 SS5 Material

Per ASTM A 572/A 572M, or ASTM A 1018, or ASTM A 656 with minimum yield strength of 50 ksi. Plate thickness is 3/8".

#### 2.1.2.2 SS150 and SS175 Material

Per ASTM A 656 or ASTM A 1018 with minimum yield strength of 80 ksi. Plate thickness is 3/8".

#### 2.1.2.3 SS200 and SS225 Material

Per ASTM A 656 or ASTM A 1018 with minimum yield strength of 80 ksi. Plate thickness is 1/2".

#### 2.1.3 Bolts

The size and type of bolts used to connect central steel shaft sections together shall conform to the following specifications:

##### 2.1.3.1 SS5 and SS150 1-1/2" Material

3/4" diameter bolt per ASTM A 320/A 320M Grade L7.

##### 2.1.3.2 SS175 1-3/4" Material

7/8" diameter bolt per ASTM A 193/A 193M Grade B7.

##### 2.1.3.3 SS200 2" Material

1-1/8" diameter bolt per ASTM A 193/A 193M Grade B7.

##### 2.1.3.4 SS225 2-1/4" Material

1-1/4" diameter bolt per ASTM A 193/A 193M Grade B7.

#### 2.1.4 Couplings

Couplings shall be formed as integral part of the plain and helical extension material. For Type SS material, the couplings shall be hot upset forged sockets.

#### 2.1.5 Thread Bar

Helical tieback anchor thread bar shall be either a threaded stud adapter, or a combination of pre-stressing steel tendon and adapter, both of which are attached to the previously installed central steel shaft via an integrally forged socket and coupling bolt.

#### 2.1.6 Anchorage Bolt

Stressing anchorages shall be a steel bearing plate with a threaded anchor nut. Anchorage devices shall be capable of developing 95% of the guaranteed ultimate tensile strength of the thread bar. Anchor nuts and other threadable hardware shall be designed to comply with the load carrying requirements of the anchorage. The bearing plate shall be fabricated from steel conforming to ASTM A 36/A 36M, ASTM A 588, ASTM A 709 or ASTM A 572/A 572M specifications, or suitable equivalent. The trumpet

shall be fabricated from a steel pipe or tube conforming to the requirements of ASTM A 53/A 53M and ASTM A 252 for pipe and ASTM A 500 for tubing, or from a PVC pipe conforming to the requirements of ASTM D 1785. Anchorage covers shall be fabricated from steel or plastic with a minimum thickness of 0.10". If grease filled, the joint between the cover and the bearing plate shall be watertight.

#### 2.1.7 Corrosion Protection

All Type SS (stainless steel) material shall be hot-dipped galvanized in accordance with ASTM A 153 after fabrication. Products deemed to be an approved equal shall be submitted in writing for approval. The term "equal" shall be defined as meeting or exceeding wholly and completely all material and performance criteria as listed in this specification without exception.

### 2.2 DESIGN CRITERIA

#### 2.2.1 General

Helical tieback anchors shall be designed to meet the specified loads and acceptance criteria as shown on the drawings. The calculations and drawings required from the Contractor shall be submitted to the Contracting Officer for review and acceptance in accordance to Section 1.5.

#### 2.2.2 Design (Working) Load

The allowable working load on the helical tieback anchor shall not exceed the following values:

$$P(\text{allowt}) = S(\text{ut}) / FS$$

Where:  $P(\text{allowt})$  = allowable working load in tension (kip)

$S(\text{ut})$  = min. ultimate tensile strength of central steel shaft segment (at coupling joint) (kip)

$FS$  = factor of safety suitable for application, i.e. temporary or permanent structures (2 for permanent, 1.4 for temporary)

#### 2.2.3 Ultimate Structural Capacity

The ultimate structural capacity shall be determined as:

$$P(\text{ultt}) = S(\text{ut})$$

Where:  $P(\text{ultt})$  = ultimate structural capacity in tension (kip)

$S(\text{ut})$  = min. ultimate tensile strength of central steel shaft (kip)

#### 2.2.4 Anchors and Thread Bars

Individual helical tieback anchors shall be designed so that the maximum test load will not exceed 90 percent of the minimum ultimate tension capacity of the central steel shaft material. The Contractor shall select the type of thread bar to be used. The thread bar shall be sized so the design load does not exceed 60 percent of the guaranteed ultimate tensile strength of the thread bar. In addition, the thread bar shall be sized so the maximum test load does not exceed 80 percent of the guaranteed ultimate tensile strength of the thread bar.

The overall length and installed torque of a helical tieback anchor shall be specified such that the required in-soil capacity is developed by

end-bearing on the helix plate(s) in an appropriate stata(s).

It is recommended that the theoretical end-bearing capacity of the helix plates be determined using 'HeliCAP' Engineering Software or equal commercially available software. The required soil parameters for use with 'HeliCAP' or equal shall be provided in the geotechnical reports. The Contracting Officer shall determine the allowable response to axial loads.

### 2.2.5 Corrosion Protection

Provide corrosion protection as indicated below:

Structure Type: PERMANENT  
Service Life: 50 YEARS  
Soil: AGGRESSIVE

CORROSION PROTECTION	
SOIL	AGGRESSIVE
CENTRAL	Galvanization
STEEL SHAFT (Lead Section)	
CENTRAL	Galvanization
STEEL SHAFT (Extension Section)	
ANCHORAGE	Trumpet* - grout filled AND Cover, if exposed

\* - trumpet typically 5'-0" beyond the anchorage.

## PART 3 EXECUTION

### 3.1 SITE CONDITIONS

Prior to commencing ground anchor installation, the Contractor shall inspect the work of all other trades and verify that all said work is completed to the point where helical tieback anchors may commence without restriction. The Contractor shall verify that all helical tieback anchors may be installed in accordance with all pertinent codes and regulations regarding such items as underground obstructions, right-of-way limitations, utilities, etc. In the event of a discrepancy, the Contractor shall notify the Contracting Officer. The Contractor shall not proceed with helical tieback anchor installation in areas of discrepancies until said discrepancies have been resolved. All costs associated with unresolved discrepancies shall be the responsibility of the Contracting Officer.

The Geotechnical Report, including logs of soil borings as shown on the boring location plan, shall be considered to be representative of the in-situ subsurface conditions likely to be encountered on the project site.

Said Geotechnical Report shall be used as the basis for helical tieback anchor design using generally accepted engineering judgement and methods.

### 3.2 INSTALLATION EQUIPMENT

Shall be rotary type, hydraulic power driven torque motor with clockwise and counter-clockwise rotation capabilities. The torque motor shall be

capable of continuous adjustment to revolutions per minute (RPM's) during installation. Percussion drilling equipment shall not be permitted. The torque motor shall have torque capacity 15% greater than the torsional strength rating of the central steel shaft to be installed. Equipment shall be capable of applying adequate down pressure (crowd) and torque simultaneously to suit project soil conditions and load requirements. The equipment shall be capable of continuous position adjustment to maintain proper ground anchor alignment.

### 3.3 INSTALLATION TOOLING

#### 3.3.1 Torque Indicator

A torque indicator shall be used during helical tieback anchor installation. The torque indicator can be an integral part of the installation equipment or externally mounted in-line with the installation tooling. They should be capable of providing continuous measurement of applied torque throughout the installation, torque measurements in increments of at least 500 ft-lb, calibrated prior to pre-production testing or start of work and re-calibrated if in the opinion of the Contracting Officer and/or Contractor reasonable doubt exists as to the accuracy of the torque measurements. Torque indicators which are an integral part of the installation equipment, shall be calibrated on-site. Torque indicators which are mounted in-line with the installation tooling, shall be calibrated either on-site or at an appropriately equipped test facility. Indicators that measure torque as a function of hydraulic pressure shall be calibrated at normal operation temperatures.

### 3.4 INSTALLATION PROCEDURES

#### 3.4.1 Central Steel Shaft

The helical tieback anchor installation technique shall be such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project. The lead section shall be positioned at the location as shown on the working drawings. The lead section may be started perpendicular to the wall face to assist initial advancement into the soil. After initial penetration, the required inclination angle shall be established. The helical tieback anchor sections shall be engaged and advanced into the soil in a smooth, continuous manner at a rate of rotation of 5 to 20 RPM's. Extension sections shall be provided to obtain the required minimum overall length and installation torque as shown on the working drawings. Connect sections together using coupling bolt and nut torqued to 40 ft-lb. Sufficient down pressure shall be applied to uniformly advance the helical tieback anchor sections approximately 3 inches per revolution. The rate of rotation and magnitude of down pressure shall be adjusted for different soil conditions and depths.

#### 3.4.2 Thread Bar

After the termination criteria as detailed in Section 3.5 has been met, the central steel shaft is connected to the anchorage via the threaded stud adapter or via the combination of prestressing steel tendon and adaptor.

#### 3.4.3 Allowable Tolerances

The tolerance quoted in this section are suggested maximums. The actual values established for a particular project will depend on the structural application.

- a. Centerline of helical tieback anchor shall not be more than 3 inches from indicated plan location.
- b. The angular tolerance between installed tieback anchor angle and design angle shall be +/- 10% as shown on the drawings.

### 3.5 TERMINATION CRITERIA

#### 3.5.1 General

The torque as measured during the installation shall not exceed the torsional strength rating of the central steel shaft. The minimum installation torque and minimum free-length criteria as shown on the working drawings shall be satisfied prior to terminating the helical tieback anchor installation. If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to achieving the minimum free-length required, the Contractor shall have the following option:

- a. Terminate the installation at the depth obtained subject to the review and acceptance of the Contracting Officer, or
- b. Remove the existing helical tieback anchor and install a new one with fewer and/or smaller diameter helix plates. The new helix configuration shall be subject to review and acceptance of the Contracting Officer. If re-installing in the same location, the top-most helix of the new helical tieback anchor shall be terminated at least (3) three feet beyond the terminating depth of the original anchor.

If the minimum installation torque as shown on the working drawings is not achieved at the minimum overall length, the Contractor shall have the following options:

- a. Remove the existing helical tieback anchor and install a new one with additional and/or larger diameter helix plates. The new helix configuration shall be subject to review and acceptance of the Contracting Officer. The new anchor must be installed at an adjacent location, which may require additional ground anchors with design loads adjusted for spacing changes.
- b. Performance test the ground anchor to determine reduced rating at which the test criteria is satisfied. This may require additional ground anchors to be installed. The de-rated capacity and additional anchor location shall be subject to the review and acceptance of the Contracting Officer.

If the minimum installation torque as shown on the working drawings is not achieved at the minimum overall length, and there is no maximum length constraint, the Contractor shall have the following options:

- a. Install the helical tieback anchor deeper using additional extension sections, or
- b. Remove the existing helical tieback anchor and install a new one with additional and/or larger diameter helix plates. The new helix configuration shall be subject to review and acceptance of the Contracting Officer. If re-installing in the same location, the top-most helix of the new helical tieback anchor shall be terminated at least (3) three feet beyond the terminating depth of the original anchor.
- c. De-rate the load capacity of the helical tieback anchor as just discussed in (b) and install additional ground anchors. The de-rated capacity and additional anchor location shall be subject to the review and

acceptance of the Contracting Officer.

If the helical tieback anchor is refused or deflected by a subsurface obstruction, the installation shall be terminated and the anchor removed. The obstruction shall be removed, if feasible, and the helical tieback anchor re-installed. If obstruction can't be removed, the helical tieback anchor shall be installed at an adjacent location, subject to review and acceptance of the Contracting Officer.

If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to proper positioning of the last plain extension section relative to the anchorage, the Contractor may remove the last plain extension and replace it with a shorter length extension. If it is not feasible to remove the last plain extension, the Contractor may cut said extension to the correct length and field drill a hole in cut-off shaft. The Contractor shall not reverse (back-out) the helical anchors to facilitate extension removal.

The average torque for the last three feet of penetration shall be used as the basis of comparison with the minimum installation torque as shown on the working drawings. The average torque shall be defined as the average of the last three readings recorded at one-foot intervals.

### 3.6 HELICAL TIEBACK ANCHOR LOAD TESTS

#### 3.6.1 General

The Contractor shall submit for review and acceptance the proposed helical tieback anchor load testing procedure. Production and pre-production test procedures shall be in conformance with the ground anchor test procedures as detailed below, and shall provide the minimum following information:

- a. Type and accuracy of load equipment
- b. Type and accuracy of load measuring equipment.
- c. Type and accuracy of anchor-head deflection equipment.
- d. Calibration report for complete load equipment, including hydraulic jack, pump, pressure gauge, hoses, and fittings.

#### 3.6.2 Pre-Production Tests

Load tests shall be performed to verify the suitability and capacity of the proposed helical tieback anchor, and the proposed installation procedures prior to installation of production anchors. 'TWO' sacrificial test anchors, one each for 16'-0" length and 25'-0" length, shall be constructed immediately prior to the start of work on the production tieback anchors. The Contracting Officer shall determine the number of pre-production tests, their location, and acceptable load and movement criteria. Additional purpose of pre-production tests is to empirically verify the ultimate capacity to the average installing torque of the helical tieback anchor for the project site.

Pre-production ground anchor installation methods, procedures, equipment, and overall length shall be identical to the production anchors to the extent practical except where approved otherwise by the Contracting Officer. Such tests shall be based, as a minimum, on the principles of the performance test.



If the pre-production test fails to meet the design requirements, the Contractor shall modify the helical tieback anchor design and/or installation methods and retest the modified anchor, as directed by the Contracting Officer.

### 3.6.3 Load Test Equipment

The hydraulic jack shall be positioned at the beginning of the test such that the unloading and repositioning of the jack during the test shall not be required. The jacking system shall be capable of applying tension load not less than eighty percent (80%) of the guaranteed ultimate tension capacity of the thread bar. The pressure gauge shall be graduated in 100 psi increments or less. The stroke of the jack shall not be less than the theoretical elastic elongation of the total ground anchor length at the maximum test load.

The load test equipment shall be capable of increasing or decreasing the applied load incrementally. The incremental control shall allow for small adjustments, which may be necessary to maintain the applied load for a sustained, hold period.

The reaction system (or retaining structure itself) shall be designed so as to minimize its movement under load and to prevent bending of the thread bar. If the reaction system is the retaining structure, then said structure and connections shall be checked to determine if they have sufficient strength and capacity to distribute the test loads to the ground. Test loads are normally higher than the design loads on the structure. The direction of the applied load shall be collinear with the ground anchor at all times.

A dial gauge shall be used to measure anchor movement. The dial gauge shall have an accuracy of at least  $\pm 0.001$  inches and a minimum travel sufficient to measure all anchor movements without requiring resetting the gauge. The dial gauge shall be positioned so its stem is coaxial with the axis of the anchor. The stem may rest on a smooth plate located at the end of the anchor. Said plate shall be positioned perpendicular to the axis of the anchor. The dial gauge shall be supported by a reference apparatus to provide an independent fixed reference point. Said reference apparatus shall be independent of the reaction system and shall not be affected by any movement of the reaction system.

The load test equipment shall be re-calibrated, if in the opinion of the Contracting Officer and/or Contractor reasonable doubt exists as to the accuracy of the load or deflection measurements.

### 3.6.4 Testing Program

#### 3.6.4.1 General

The anchor testing program shall consist of two parts, namely, performance tests and proof tests. The testing procedures are as described in Sections 3.6.4.2 and 3.6.4.3 respectively.

The Contracting Officer shall select the helical tieback anchors to be performance testing within each wall area or tier. One anchor per wall area or tier shall be tested in accordance with the performance test procedures. These anchors should be located in the area of soil borings if possible. These anchors are to be installed, tested, and approved by the

Contracting Officer prior to installation of production anchors within that area or tier. All anchors, which are performance tested, shall be used as production anchors and incorporated into the retention structure. Upon completion and approval of the performance tests, the installation of production anchors may proceed.

Proof tests shall be performed on all production helical tieback anchors which are not performance tested. Proof test results are subject to the approval of the Contracting Officer.

#### 3.6.4.2 Performance Test Procedures

Two percent (2%) of the helical tieback anchors or a minimum of two (2) anchors, which ever is greater, shall be performance tested in accordance with the following procedures.

The helical anchors which are performance tested may be completely unloaded prior to adjusting to the lock-off load, if so warranted by the construction sequence. Final loading to the lock-off load does not require further movement readings.

Helical tieback anchors shall be performance tested by incrementally loading and unloading the anchor in accordance with the following schedule.

The load shall be raised from one increment to another immediately after recording the anchor movement. The anchor movement shall be measured and recorded to the nearest 0.001 inches with respect to an independent fixed reference point at the alignment load and at each incremental load. The load shall be monitored with a pressure gauge. At load increments other than the maximum test load, the load shall be held just long enough to obtain and record the movement reading.

PERFORMANCE TEST SCHEDULE				
CYCLICAL LOAD INCREMENTS (%DL/100)				
AL	AL	AL	AL	AL
0.25DL*	0.25DL	0.25DL	0.25DL	0.25DL
	0.50DL*	0.50DL	0.50DL	0.50DL
		0.75DL*	0.75DL	0.75DL
			1.00DL*	1.00DL
				1.25DL*
				Reduce to
				lock-off load <sup>^</sup>

\* - see fifth (5th) paragraph, this Section.

<sup>^</sup> - except as noted in second (2nd) paragraph, this Section.

AL = Alignment Load (10%-15%DL); DL = Design (Working) Load

The 1.25DL load increment shall be held for ten (10) minutes. The ten minute observation period shall commence as soon as the 1.25DL load is applied to the anchor. Movements shall be recorded at 0.5, 1, 2, 3, 4, 5, 6, and 10 minutes. If the anchor movement between the one (1) minute and ten (10) minute readings exceeds 0.05 inches, then the 1.25DL test load shall be maintained for an additional 20 minutes. Movements shall be recorded at 15, 20, 25, and 30 minutes. If the acceptance criteria given in Section 3.6.5 is not satisfied, then the anchor test shall be continued for an additional 30 minutes. Movements shall be recorded at 45 and 60 minutes. If the acceptance criteria is not satisfied after this extended observation period, then the Contractor shall exercise one of the options as referenced in Section 3.6.5.

The Contractor shall plot the helical anchor movement versus load for each load increment marked with an asterisk (\*) in the performance test schedule and plot the residual movement at each alignment load versus the highest previously applied load.

Throughout the 1.25DL observation period, the load shall be held constant by adjusting the hydraulic pressure. Care must be taken so as not to exceed the 1.25DL test load.

### 3.6.4.3 Proof Test Procedures

All anchors which are not performance tested shall be proof tested.

Anchors which are proof tested may be completely unloaded prior to adjusting to the lock-off load, if so warranted by the construction sequence. Final loading to the lock-off load does not require further movement readings.

The proof test shall be performed by incrementally loading the helical anchor in accordance with the following schedule. The load shall be raised from one increment to another after an observation period. The anchor movement shall be measured and recorded to the nearest 0.001 inches with respect to an independent fixed reference point at the alignment load and at each incremental load. The load shall be monitored with a pressure gauge. At load increments other than the maximum test load, the load shall be held for a period not to exceed two (2) minutes. The two minute observation period shall begin when the pump begins to load the anchor to the next load increment. Movement readings shall be taken at the end of the two minute observation period.

PROOF TEST SCHEDULE	
LOAD TEST SCHEDULE(%DL/100)	OBSERVATION PERIOD (MIN.)
AL	0.0
0.25DL	2.0
0.50DL	2.0
0.75DL	2.0
1.00DL	2.0
1.25DL	5.0
Reduce to lock-off load^	

^ - except as noted in the second (2nd) paragraph, this Section.

AL = Alignment Load (10%-15% DL)

DL = Design (Working) Load

The 1.25DL test load shall be maintained for five (5) minutes. This five minute observation period shall commence as soon as the 1.25DL is applied to the anchor. Movement readings shall be recorded at 0.5, 1, 2, 3, 4, and 5 minutes. If the movement between the 0.5 and 5 minute reading exceeds 0.05 inches, then the 1.25DL test load shall be maintained for an additional five (5) minutes. Movement readings shall be recorded at 6 and 10 minutes.

If the acceptance criteria given in Section 3.6.5 is not satisfied, then the anchor test shall be continued for an additional twenty (20) minutes. Movement readings shall be recorded at 15, 20, 25, and 30 minutes. If the acceptance criteria is not satisfied after this extended observation period, then the Contractor shall exercise one of the options as referenced in Section 3.6.5.

The Contractor shall plot the helical anchor movement versus load for each load increment in the proof test.

Throughout the 1.25DL observation period, the load shall be held constant by adjusting the hydraulic pressure. Care must be taken so as not to exceed the 1.25DL test load.

### 3.6.5 Acceptance Criteria

The net movement for the performance and proof tests shall not exceed 0.10 inches during the final log cycle of time (examples, 3-min to 30-min for performance tests; 1-min to 10-min for proof tests).

If the above criteria is exceeded, then the test shall be continued for an extended period of time as defined in Section 3.6.4.2 for the performance test and in Section 3.6.4.3 for the proof test. If the final log cycle of time movement at the end of the extended observation period exceeds 0.10 inches then the Contractor shall have the following options:

- a. Extend the observation period for an additional 60 minutes for the performance test with movement readings taken at 80, 90, 100, and 120 minutes. Extend the observation period for an additional 40 minutes if the proof test is involved with movement readings taken at 45 and 60 minutes. The net movement shall not exceed 0.10 inches during the final log cycle of time.
- b. Install the helical anchor deeper so as to increase its average installation torque, provided that the maximum torque capacity of the anchor will not be exceeded. This anchor shall be proof tested.
- c. Remove the helical anchor and reinstall an anchor with larger diameter and/or additional helices. If this anchor is reinstalled at the same location, then the last helix of this reinstalled anchor shall penetrate at least five (5'-0") feet beyond the length of the original anchor. This anchor shall be proof tested.
- d. Reduce the design load of the helical anchor. This anchor shall be performance tested at the reduced design load. This option will require one or two additional anchors to be installed adjacent to this reduced design load anchor. The number of additional anchors to be installed is a function of the reduced design load. Adjacent anchor(s) shall be installed at least four (4'-0") feet from the reduced design load anchor. Design loads on adjacent anchor(s) shall be adjusted accordingly based on the revised horizontal spacing.

-- End of Section --

## SECTION 02630

## STORM DRAINAGE

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS  
(AASHTO)

AASHTO HB-17 (2002) Standard Specifications for Highway  
Bridges

ASTM INTERNATIONAL (ASTM)

ASTM D 1056 (2000) Flexible Cellular Materials -  
Sponge or Expanded Rubber

ASTM D 1171 (1999) Rubber Deterioration - Surface  
Ozone Cracking Outdoors or Chamber  
(Triangular Specimens)

ASTM D 1557 (2002) Laboratory Compaction  
Characteristics of Soil Using Modified  
Effort (56,000 ft-lbf/cu. ft. (2,700  
kN-m/cu.m.))

ASTM D 1784 (2003) Rigid Poly(Vinyl Chloride) (PVC)  
Compounds and Chlorinated Poly(Vinyl  
Chloride) (CPVC) Compounds

ASTM D 2167 (1994; R 2001) Density and Unit Weight of  
Soil in Place by the Rubber Balloon Method

ASTM D 2321 (2000) Underground Installation of  
Thermoplastic Pipe for Sewers and Other  
Gravity-Flow Applications

ASTM D 2729 (2003) Poly(Vinyl Chloride) (PVC) Sewer  
Pipe and Fittings

ASTM D 2922 (2001) Density of Soil and Soil-Aggregate  
in Place by Nuclear Methods (Shallow Depth)

ASTM D 3017 (2001) Water Content of Soil and Rock in  
Place by Nuclear Methods (Shallow Depth)

ASTM D 3034 (2000) Type PSM Poly(Vinyl Chloride) (PVC)  
Sewer Pipe and Fittings

ASTM D 3212 (1996a; R 2003) Joints for Drain and Sewer

Plastic Pipes Using Flexible Elastomeric  
Seals

ASTM F 477

(2002e1) Elastomeric Seals (Gaskets) for  
Joining Plastic Pipe

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-03 Product Data

## Placing Pipe

Printed copies of the manufacturer's recommendations for installation procedures of the material being placed, prior to installation.

## SD-04 Samples

## Pipe for Culverts and Storm Drains

## SD-07 Certificates

Resin Certification  
Determination of Density

Certified copies of test reports demonstrating conformance to applicable pipe specifications, before pipe is installed.

## 1.3 DELIVERY, STORAGE, AND HANDLING

## 1.3.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. Before, during, and after installation, plastic pipe and fittings shall be protected from any environment that would result in damage or deterioration to the material. The Contractor shall have a copy of the manufacturer's instructions available at the construction site at all times and shall follow these instructions unless directed otherwise by the Contracting Officer. Solvents, solvent compounds, lubricants, elastomeric gaskets, and any similar materials required to install plastic pipe shall be stored in accordance with the manufacturer's recommendations and shall be discarded if the storage period exceeds the recommended shelf life. Solvents in use shall be discarded when the recommended pot life is exceeded.

## 1.3.2 Handling

Materials shall be handled in a manner that ensures delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged.

## PART 2 PRODUCTS

## 2.1 PIPE FOR CULVERTS AND STORM DRAINS

Pipe for culverts and storm drains shall be of the sizes indicated and shall conform to the requirements specified.

## 2.1.1 Perforated Piping

## 2.1.1.1 PVC Pipe

ASTM D 2729.

## 2.1.2 PVC Pipe

The pipe manufacturer's resin certification, indicating the cell classification of PVC used to manufacture the pipe, shall be submitted prior to installation of the pipe.

## 2.2 MISCELLANEOUS MATERIALS

## 2.2.1 Joints

## 2.2.1.1 PVC Plastic Pipes

Joints shall be solvent cement or elastomeric gasket type in accordance with the specification for the pipe and as recommended by the pipe manufacturer.

## PART 3 EXECUTION

## 3.1 EXCAVATION FOR PIPE CULVERTS, STORM DRAINS, AND DRAINAGE STRUCTURES

Excavation of trenches, and for appurtenances and backfilling for culverts and storm drains, shall be in accordance with the applicable portions of Section 02300 EARTHWORK and the requirements specified below.

## 3.1.1 Trenching

The width of trenches at any point below the top of the pipe shall be not greater than the outside diameter of the pipe plus 24 inches to permit satisfactory jointing and thorough tamping of the bedding material under and around the pipe. Sheet piling and bracing, where required, shall be placed within the trench width as specified. Contractor shall not overexcavate. Where trench widths are exceeded, redesign with a resultant increase in cost of stronger pipe or special installation procedures will be necessary.

Cost of this redesign and increased cost of pipe or installation shall be borne by the Contractor without additional cost to the Government.

## 3.1.2 Removal of Unstable Material

Where wet or otherwise unstable soil incapable of properly supporting the pipe, as determined by the Contracting Officer, is unexpectedly encountered in the bottom of a trench, such material shall be removed to the depth required and replaced to the proper grade with select granular material, compacted as provided in paragraph BACKFILLING. When removal of unstable material is due to the fault or neglect of the Contractor while performing shoring and sheet piling, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to the

Government.

### 3.2 BEDDING

The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe.

#### 3.2.1 Plastic Pipe

Bedding for PVC pipe shall meet the requirements of ASTM D 2321. Bedding, haunching, and initial backfill shall be either Class IB or II material.

### 3.3 PLACING PIPE

Each pipe shall be thoroughly examined before being laid; defective or damaged pipe shall not be used. Plastic pipe shall be protected from exposure to direct sunlight prior to laying, if necessary to maintain adequate pipe stiffness and meet installation deflection requirements. Pipelines shall be laid to the grades and alignment indicated. Proper facilities shall be provided for lowering sections of pipe into trenches. Lifting lugs in vertically elongated metal pipe shall be placed in the same vertical plane as the major axis of the pipe. Pipe shall not be laid in water, and pipe shall not be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary. Deflection of installed flexible pipe shall not exceed the following limits:

TYPE OF PIPE	MAXIMUM ALLOWABLE DEFLECTION (%)
Plastic	7.5

Not less than 30 days after the completion of backfilling, the Government may perform a deflection test on the entire length of installed flexible pipe using a mandrel or other suitable device. Installed flexible pipe showing deflections greater than those indicated above shall be retested by a run from the opposite direction. If the retest also fails, the suspect pipe shall be replaced.

### 3.4 JOINTING

#### 3.4.1 Flexible Watertight Joints

Gaskets and jointing materials shall be as recommended by the particular manufacturer in regard to use of lubricants, cements, adhesives, and other special installation requirements. Surfaces to receive lubricants, cements, or adhesives shall be clean and dry. Gaskets and jointing materials shall be affixed to the pipe not more than 24 hours prior to the installation of the pipe, and shall be protected from the sun, blowing dust, and other deleterious agents at all times. Gaskets and jointing materials shall be inspected before installing the pipe; any loose or improperly affixed gaskets and jointing materials shall be removed and replaced. The pipe shall be aligned with the previously installed pipe, and the joint pushed home. If, while the joint is being made the gasket becomes visibly dislocated the pipe shall be removed and the joint remade.



### 3.5 BACKFILLING

#### 3.5.1 Backfilling Pipe in Trenches

After the pipe has been properly bedded, selected material from excavation or borrow, at a moisture content that will facilitate compaction, shall be placed along both sides of pipe in layers not exceeding 6 inches in compacted depth. The backfill shall be brought up evenly on both sides of pipe for the full length of pipe. The fill shall be thoroughly compacted under the haunches of the pipe. Each layer shall be thoroughly compacted with mechanical tampers or rammers. This method of filling and compacting shall continue until the fill has reached an elevation of at least 12 inches above the top of the pipe. The remainder of the trench shall be backfilled and compacted by spreading and rolling or compacted by mechanical rammers or tampers in layers not exceeding 12 inches. Tests for density shall be made as necessary to ensure conformance to the compaction requirements specified below. Where it is necessary, in the opinion of the Contracting Officer, that sheeting or portions of bracing used be left in place, the contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.

#### 3.5.2 Backfilling Pipe in Fill Sections

For pipe placed in fill sections, backfill material and the placement and compaction procedures shall be as specified below. The fill material shall be uniformly spread in layers longitudinally on both sides of the pipe, not exceeding 6 inches in compacted depth, and shall be compacted by rolling parallel with pipe or by mechanical tamping or ramming. Prior to commencing normal filling operations, the crown width of the fill at a height of 12 inches above the top of the pipe shall extend a distance of not less than twice the outside pipe diameter on each side of the pipe or 12 feet, whichever is less. After the backfill has reached at least 12 inches above the top of the pipe, the remainder of the fill shall be placed and thoroughly compacted in layers not exceeding 12 inches.

#### 3.5.3 Movement of Construction Machinery

When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any damaged pipe shall be repaired or replaced.

#### 3.5.4 Compaction

##### 3.5.4.1 General Requirements

Cohesionless materials include gravels, gravel-sand mixtures, sands, and gravelly sands. Cohesive materials include clayey and silty gravels, gravel-silt mixtures, clayey and silty sands, sand-clay mixtures, clays, silts, and very fine sands. When results of compaction tests for moisture-density relations are recorded on graphs, cohesionless soils will show straight lines or reverse-shaped moisture-density curves, and cohesive soils will show normal moisture-density curves.

##### 3.5.4.2 Minimum Density

Backfill over and around the pipe and backfill around and adjacent to drainage structures shall be compacted at the approved moisture content to

the following applicable minimum density, which will be determined as specified below.

- a. Under airfield and heliport pavements, paved roads, streets, parking areas, and similar-use pavements including adjacent shoulder areas, the density shall be not less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material, up to the elevation where requirements for pavement subgrade materials and compaction shall control.
- b. Under unpaved or turfed traffic areas, density shall not be less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material.
- c. Under nontraffic areas, density shall be not less than that of the surrounding material.

### 3.5.5 Determination of Density

Testing shall be the responsibility of the Contractor and performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. Tests shall be performed in sufficient number to ensure that specified density is being obtained. Laboratory tests for moisture-density relations shall be made in accordance with ASTM D 1557 except that mechanical tampers may be used provided the results are correlated with those obtained with the specified hand tamper. Field density tests shall be determined in accordance with ASTM D 2167 or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted, if necessary, using the sand cone method as described in paragraph Calibration of the referenced publications. ASTM D 2922 results in a wet unit weight of soil and when using this method ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall be checked along with density calibration checks as described in ASTM D 3017 or ASTM D 2922. Test results shall be furnished the Contracting Officer. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at intervals as directed.

## 3.6 PIPELINE TESTING

### 3.6.1 Deflection Testing

Perform a deflection test on entire length of installed plastic pipeline on completion of work adjacent to and over the pipeline, including leakage tests, backfilling, placement of fill, grading, paving, concreting, and any other superimposed loads. Deflection of pipe in the installed pipeline under external loads shall not exceed 4.5 percent of the average inside diameter of pipe. Determine whether the allowable deflection has been exceeded by use of a pull-through device or a deflection measuring device.

- a. Pull-through device: This device shall be a spherical, spheroidal, or elliptical ball, a cylinder, or circular sections fused to a common shaft. Circular sections shall be so spaced on the shaft that distance from external faces of front and back sections will equal or exceed diameter of the circular section. Pull-through device may also be of a design promulgated by the Uni-Bell Plastic Pipe Association, provided that the device meets

the applicable requirements specified in this paragraph, including those for diameter of the device. Ball, cylinder, or circular sections shall conform to the following:

- (1) A diameter, or minor diameter as applicable, of 95 percent of the average inside diameter of the pipe; tolerance of plus 0.5 percent will be permitted.
  - (2) A homogeneous material throughout, with a density greater than 1.0 as related to water at 39.2 degrees F, and a surface Brinell hardness of not less than 150.
  - (3) Center bored and through bolted with a 1/4 inch minimum diameter steel shaft having a yield strength of not less than 70,000 psi, with eyes or loops at each end for attaching pulling cables.
  - (4) Each eye or loop shall be suitably backed with a flange or heavy washer such that a pull exerted on opposite end of shaft will produce compression throughout remote end.
- b. Deflection measuring device: Sensitive to 1.0 percent of the diameter of the pipe being tested and accurate to 1.0 percent of the indicated dimension. Deflection measuring device shall be approved by the Contracting Officer prior to use.
  - c. Pull-through device: Pass the pull-through device through each run of pipe, either by pulling it through or flushing it through with water. If the device fails to pass freely through a pipe run, replace pipe which has the excessive deflection and completely retest in same manner and under same conditions as specified.
  - d. Deflection measuring device procedure: Measure deflections through each run of installed pipe. If deflection readings in excess of 4.5 percent of average inside diameter of pipe are obtained, retest pipe by a run from the opposite direction. If retest continues to show a deflection in excess of 4.5 percent of average inside diameter of pipe, remove pipe which has excessive deflection, replace with new pipe, and completely retest in same manner and under same conditions.
  - e. Warranty period test: Pipe found to have a deflection of greater than 5 percent of average inside diameter when deflection test is performed just prior to end of one-year warranty period shall be replaced with new pipe and tested as specified for leakage and deflection.

-- End of Section --

## SECTION 02821A

## CHAIN LINK FENCES AND GATES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM B 117	(2002) Operating Salt Spray (Fog) Apparatus
ASTM C 94	(1994) Ready-Mixed Concrete
ASTM F 1043	(2000) Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework
ASTM F 883	(1997) Padlocks
ASTM G 23	(1996) Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials
ASTM G 26	(1996) Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials
ASTM G 53	(1996) Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials

## U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS RR-F-191	(Rev. K) Fencing, Wire and Post Metal (and Gates, Chain-Link Fence Fabric, and Accessories)
FS RR-F-191/1	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Fabric)
FS RR-F-191/2	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Gates)
FS RR-F-191/3	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)
FS RR-F-191/4	(Rev. D) Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation;

submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Gates

Post spacing

Location of gate, corner, end, and pull posts

SD-03 Product Data

Chain-link fencing components

Accessories

SD-06 Test Reports

Weight in grams ounces for zinc coating

Thickness of PVC coating

Chemical composition and thickness of aluminum alloy coating

SD-07 Certificates

Fabric

Posts

Braces

Framing

Rails

Tension wires

Gates

Padlocks

SD-08 Manufacturer's Instructions

Fence

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver materials to site in an undamaged condition. Store materials off the ground to provide protection against oxidation caused by ground contact.

## 1.4 QUALITY ASSURANCE

### 1.4.1 Required Report Data

Submit reports of listing of chain-link fencing and accessories regarding Weight in grams ounces for zinc coating, thickness of PVC coating, and chemical composition and thickness of aluminum alloy coating.

## PART 2 PRODUCTS

### 2.1 CHAIN-LINK FENCING AND ACCESSORIES

FS RR-F-191 and detailed specifications as referenced and other requirements as specified.

#### 2.1.1 Fabric

FS RR-F-191/1; Type IV, polyvinyl chloride (PVC) coated over zinc- or aluminum-coated steel. Mesh size, 2 inches. Height of fabric, as indicated by the drawings or Contracting Officer. Knuckle finish on top and bottom of fabric.

#### 2.1.2 Gates

FS RR-F-191/2; Type II, double swing. Shape and size of gate frame, as indicated on the drawings. Framing and bracing members, round of steel alloy. Gate frames and braces of minimum sizes listed in FS RR-F-191/3 for each Class and Grade except that steel pipe frames shall be 2.50 inches od, 0.120 inches minimum wall thickness and aluminum pipe frames and intermediate braces shall be 2.50 inches od, 1.12 lb/ft of length. Gate fabric, as specified for fencing fabric. Coating for steel latches, stops, hinges, keepers, and accessories, PVC, minimum thickness of 0.010 inch. Gate latches, plunger bar type. Attach gate fabric to gate frame in accordance with manufacturer's standards, except that welding will not be permitted.

#### 2.1.3 Posts, Top Rails and Braces

FS RR-F-191/3 line posts; Class 1, steel pipe, Grade B. End, corner, and pull posts; Class 1, steel pipe, Grade B. Braces; Class 1, steel pipe Grade B. Provide PVC black color coating, minimum thickness, 0.10 inch. Steel pipe, Class 1, Grade B shall meet the following performance criteria when subjected to salt spray testing in accordance with ASTM B 117:

- a. Exterior 1,000 hours with maximum 5 percent red rust.

##### 2.1.3.1 Composite Posts

Polyester resin reinforced posts shall be produced from polyester or epoxy resin, reinforced with E-glass and filler material. Posts shall meet the ASTM F 1043 bending strength for heavy industrial fencing, and shall be filled with 2,500 psi concrete. Posts shall be protected from UV degradation by a veil of polyester cloth impregnated with resin and an acrylic based 1.5 mil DFT coating system. The post will exhibit no structural failure (less than 10 percent loss of strength) as a result of

exposure to moisture and UV lamps per ASTM G 23, ASTM G 26, and ASTM G 53, (3600 hours). Posts shall be provided black in color to match fabric.

#### 2.1.4 Fencing Accessories

FS RR-F-191/4. Provide wire ties constructed of the same material as the fencing fabric. Provide accessories with polyvinyl (PVC) coatings similar to that specified for chain-link fabric or framework.

#### 2.1.5 Concrete

ASTM C 94, using 3/4 inch maximum-size aggregate, and having minimum compressive strength of 3000 psi at 28 days.

#### 2.1.6 Grout

Provide grout of proportions one part portland cement to three parts clean, well-graded sand and a minimum amount of water to produce a workable mix.

### PART 3 EXECUTION

#### 3.1 SITE PREPARATION

##### 3.1.1 Clearing and Grading

Clear fence line of trees, brush, and other obstacles to install fencing. Establish a graded, compacted fence line prior to fencing installation. Compact fill used to establish fence line.

##### 3.1.2 Excavation

Excavate to dimensions indicated for concrete-embedded items, except in bedrock. If bedrock is encountered, continue excavation to depth indicated or 18 inches into bedrock, whichever is less, with a diameter in bedrock a minimum of 2 inches larger than outside diameter of post. Clear post holes of loose material.

#### 3.2 FENCE INSTALLATION

Install fence on prepared surfaces to line and grade indicated. Install fence in accordance with fence manufacturer's written installation instructions except as modified herein.

##### 3.2.1 Post Spacing

Provide line posts spaced equidistantly apart, not exceeding 6' 3" on center. Provide gate posts spaced as necessary for size of gate openings. Do not exceed 500 feet on straight runs between braced posts. Provide corner or pull posts, with bracing in both directions, for changes in direction of 15 degrees or more, or for abrupt changes in grade. Provide drawings showing location of gate, corner, end, and pull posts.

##### 3.2.2 Post Setting

Set posts plumb. Allow concrete to cure a minimum of 72 hours before performing other work on posts.

#### 3.2.2.1 Earth and Bedrock

Provide concrete bases of dimensions indicated. Compact concrete to eliminate voids, and finish to a dome shape.

#### 3.2.2.2 Concrete Slabs and Walls

Set posts into zinc-coated sleeves, set in concrete slab or wall, to a minimum depth of 12 inches. Fill sleeve joint with lead, nonshrink grout, or other approved material. Set posts for support of removable fence sections into sleeves that provide a tight sliding joint and hold posts aligned and plumb without use of lead or setting material.

#### 3.2.3 Bracing

Brace gate, corner, end, and pull posts to nearest post with a horizontal brace used as a compression member, placed at least 12 inches below top of fence, and two diagonal truss rods and truss tighteners used as tension members.

#### 3.2.4 Top Rails

Install top rails before installing chain-link fabric. Pass top rail through intermediate post caps. Provide expansion coupling spaced as indicated.

#### 3.2.5 Top and Bottom Tension Wires

Install top and bottom tension wires before installing chain-link fabric, and pull wires taut. Place top and bottom tension wires within 8 inches of respective fabric line.

#### 3.2.6 Fabric

Pull fabric taut and secure fabric to top rail and top wire and bottom wire, close to both sides of each post and at maximum intervals of 24 inches on center. Secure fabric to posts using stretcher bars, ties or clips spaced 15 inches on center, or by integrally weaving to integral fastening loops of end, corner, pull, and gate posts for full length of each post. Install fabric on opposite side of posts from area being secured. Install fabric so that bottom of fabric is as indicated on the drawings.

### 3.3 ACCESSORIES INSTALLATION

#### 3.3.1 Post Caps

Install post caps as recommended by the manufacturer.

#### 3.3.2 Supporting Arms

Design supporting arms to accommodate top rail. Install supporting arms as recommended by manufacturer. In addition to manufacturer's standard connections, permanently secure supporting arms to posts. Studs driven by low-velocity powder-actuated tools may be used with steel, wrought iron, ductile iron, or malleable iron. Do not use studs driven by powder-actuated tools with gray iron or other material that will fracture.



3.3.3 Gates

Install swing gates to swing through 180 degrees from closed to open.

3.4 GROUNDING

Ground fencing as indicated by the Contracting Officer.

3.5 CLEANUP

Remove waste fencing materials and other debris from the station.

-- End of Section --

## SECTION 02822A

## WOOD GRAIN VINYL FENCE

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM D 1784	Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
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## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

## Shop Drawings; G

Contractor shall submit complete details of entire fence layout, showing member sizes and part identification, fasteners, anchors, and fittings.

## 1.3 APPROVAL OF POLYVINYL CHLORIDE FENCE MATERIALS

Polyvinyl chloride fence materials shall be thoroughly inspected for cracking, peeling, and conformance with the specifications by the Contracting Officer prior to installation. Any fence materials rejected by the Contracting Officer shall be replaced by the Contractor with approved materials at no additional cost to the Government.

## PART 2 PRODUCTS

## 2.1 PVC FENCES

PVC fences shall be prefabricated fence components manufactured of hollow PVC extrusions and conform to the following:

## 2.1.1 Poly (Vinyl Chloride) (PVC) Material

Rigid polyvinyl chloride (PVC) specially formulated for outdoor applications; compound conforming to ASTM D 1784 Classification 12333 or higher.

### 2.1.2 Layout

As indicated on the drawings.

### 2.1.3 Connections

Standard concealed fasteners and fittings, providing flush, smooth, rigid, hairline joints as recommended by the manufacturer.

### 2.1.4 Exposed Ends of Hollow Members

Closed with prefabricated end fittings.

### 2.1.5 Color

Brown; integral solid color throughout extrusions.

## 2.2 FENCE MEMBERS

Open Rail Fence conforming to the following:

### 2.2.1 Configuration

Three-rail system, rails 14" apart.

### 2.2.2 Posts

6 inches square wood grain textured, 8 foot nominal spacing; with 0.15 inch nominal wall thickness and preformed holes for rails.

### 2.2.3 Rails

4" diameter or 4" x 4" arris with chamfered ends, 8 feet long; 0.09 inch nominal thickness.

## 2.3 GATES

### 2.3.1 Configuration

Three-rail system, rails 14" apart.

### 2.3.2 Posts

6 inches square wood grain textured, 6 foot nominal spacing; with 0.15 inch nominal wall thickness and preformed holes for rails.

### 2.3.3 Rails

4" diameter or 4" x 4" arris with chamfered ends, 6 feet long; 0.09 inch nominal thickness.

### 2.3.4 Bracing

Two diagonal style bracing and one center brace; as indicated on the drawings. Bracing size shall be as recommended by the manufacturer.

### 2.3.5 Hinged Lock

Gate shall have a hinged locking device as recommended by the manufacturer.

## 2.4 POST LENGTH

Posts shall be 5 feet high.

## 2.5 CONNECTIONS

### 2.5.1 Mounting for Posts

Fence posts shall be mounted and centered on top of a 1/2" thick, 14" x 14" stainless steel bearing plate. Two (2) 6" x 4" x 5/16" stainless steel angles shall be anchored through the bearing plate into the concrete slab by use of two (2) 5/8" diameter stainless steel anchors (each side). Two (2) 1/2" diameter machine bolts with stainless steel nuts and washers shall secure the post to the steel angles. See Sheet 14 - 'CONSTRUCTION DETAILS' for clarity.

## 2.6 ACCESSORIES

### 2.6.1 Post Caps

Contractor shall use standard, snap lock style post caps or as recommended by the manufacturer.

## 2.7 CONCRETE

ASTM C 94/C 94M, using 3/4 inch maximum size aggregate, and having minimum compressive strength of 3000 psi at 28 days. Grout shall consist of one part portland cement to three parts clean, well-graded sand and the minimum amount of water to produce a workable mix.

## PART 3 EXECUTION

### 3.1 FENCE INSTALLATION

Contractor shall install wood grain poly (vinyl chloride) (PVC) fence at the locations shown on the drawings and as recommended by the manufacturer.

### 3.2 GATE INSTALLATION

Gates shall be installed at the locations shown. Hinged gates shall be mounted to swing as indicated. Latches, stops, and keepers shall be installed as required. Hinge pins, and hardware shall be secured to prevent removal.

-- End of Section --

## SECTION 02930

## PLANTING

## PART 1 GENERAL

## 1.1 DESCRIPTION

The work under this section shall consist of furnishing all labor, materials and equipment required to complete the plantings as indicated, in strict accordance with the Specifications and applicable Drawings, and subject to the terms and conditions of the Contract. This work shall include but not be limited to the following:

1. Preparation of plant pits and beds including excavating and back-filling of all planting areas with specified planting mixture.
2. Furnishing all plant materials shown on the Drawings, planting and all necessary planting operations including watering, fertilizing, spraying, mulching, weeding, pruning and protection of roots as specified.
3. Protecting, maintaining, guaranteeing and replacing plant materials and related items.

## 1.2 MATERIALS STORAGE AND CLEAN-UP

The Contractor shall keep the premises free from rubbish and all debris at all times and shall arrange his material storage so as not to interfere with the operation of the project. All unused materials, rubbish and debris shall be removed from the site.

## 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-01 Preconstruction Submittals

## Field Stockpiling Plants; G

A minimum of 60 days prior to initiation of planting operations, the Contractor shall submit to the Contracting Officer for approval, a plan sheet indicating the location of each of the proposed field stockpiling sites (field caches). The number and location of the field stockpiling sites shall be developed in such a manner as to promote an efficient planting operation. If required, additional stockpiling areas shall be established at locations selected by the Contracting Officer at no additional cost to the Government.

## Source of Supply

The Contractor shall furnish complete information as to the location of all plants, from which he intends to supply. The

Contracting Officer reserves the right to inspect, tag (seal) and approve all plants at the source of supply. This inspection and tagging shall not in any way eliminate the right of rejection at the site for such deficiencies as the presence of heated materials, dried trees, dried roots or gawking media, excessive mold, discolored tips, dormancy release or damaged packaging and shipping materials. Any materials not conforming to the specifications may be rejected. All rejected materials shall be removed from the work site by the end of each working day.

#### Layout Plan; G

The Contractor shall submit a proposed layout plan 60 days prior to planting. It shall be clearly marked and documented. A list of the quantities of each species to be installed in each of the planting blocks or areas shall be submitted with the plan.

#### Estimated Planting Schedule; G

No later than 45 days prior to the estimated planting date, the Contractor shall submit an estimated planting schedule for approval. This estimated schedule shall include the plant shipping dates from the suppliers, plant delivery dates at the construction site or designated delivery point, planting dates for each of the shipments, plant quantities, and an estimate of the planting crew size. The use of multiple plant material shipping dates is acceptable.

#### SD-03 Product Data

##### Planting Materials; G

Within 30 days after Notice to Proceed, the Contractor shall provide a complete listing of proposed planting materials and their genetic origins to the Contracting Officer for review. If determined to be deficient, additional information shall be provided. The Contractor should be aware that more than one vendor may be required to obtain all the necessary plant materials. Within 60 days after approval, the Contractor shall forward draft purchase orders for all specified plant materials. Only after receiving written approval of the genetic origin of the source material, shall the Contractor initiate procurement.

##### Plant Material Labels

For the purpose of inspection and plant identification, durable, legible labels stating in weather-resistant ink, the correct plant name and size, as specified in the list of required plants shall be securely attached to all plants, and containers or plant material delivered at the plant site.

##### Root control barrier

##### Metal edging

##### Metal anchors

##### Antidesiccants

## SD-07 Certificates

## Certificates of Inspection; G

All shipment of orders of plant material shall be properly inspected at the nursery, or at the growing site by the authorized Federal and State authorities. All necessary inspection certificates shall accompany the invoice for each shipment or order of stock, as may be required by law for the necessary transportation, and such certificates shall be filed with the Contracting Officer prior to acceptance of the materials.

## Certification; G

The Contractor shall supply certification from the suppliers that the plants supplied are plants specified or agreed to under substitution. No compensation will be made for materials or the cost of installation for plant species that are not specified.

## 1.4 WARRANTY

All plant material and planting shall be guaranteed for a period of a minimum of one (1) year which shall include at least two (2) full growing seasons from the date of substantial completion of the landscaping installation. The growing season shall be defined as the period from April 1st to September 15.

## 1.5 LANDSCAPE MAINTENANCE

The Landscape Contractor shall maintain the landscaping during and throughout the construction period until Final Acceptance as described in the section: Inspection and Acceptance of this Specification.

## 1.6 DISEASE AND PEST CONTROL

Herbicide application has not been permitted for use at the site.

1. Chemicals used to control disease and insects shall be effective, shall provide quick and lasting results, and shall not do any damage to plant materials or have any ill effects upon soils or the tidal wetland environment. Toxic and poisonous chemicals which may present health hazards to humans and animals shall not be used. Chemicals shall not be flammable, shall not burn foliage and roots, and shall not volatilize and form vapors which may cause damage. All chemicals shall be stored in such a manner that effectiveness is not impaired and shall spread uniformly and adhere well to foliage, when applied.

2. Insect control shall be a mixture containing a fungicide, a milicide, and control for both sucking and chewing insects shall be used only if ingredients are compatible. Chemicals shall be used with discretion so as not to harm plant materials or non-target animals or insects or become ineffective during the period required. Disease and pest control shall be delivered to the site in sealed containers bearing the manufacturer's guarantee statement attesting to mixtures and percentages of each chemical. Chemicals are subject to the approval of the Pure Food and Drug Administration, the USDA, the State Agricultural Station and the Contracting Officer, who shall give written approval before any chemical is used.

3. Contractor shall be licensed for application of such chemicals by the New York State Department of Environmental Conservation, or any other state or local agency having jurisdiction.
4. Limits of pesticide application shall be flagged and identified in accordance with all Federal, State and local requirements.
5. No disease or pest control ingredients shall be delivered to the site or used on-site without direct permission from the NOAA Restoration Center.

## PART 2 PRODUCTS

### 2.1 SCIENTIFIC AND COMMON NAMES

The scientific and common names of plants herein specified or shown on the drawings conform to the approved names given in Standardized Plant Names prepared by the American Committee on Horticultural Nomenclature, except that where local usage does not follow this standard, the accepted local names are given in parenthesis.

### 2.2 PLANT STOCK

#### 2.2.1 General

1. Plant material shall be first quality stock and shall conform to the code of standards set forth in the current edition of the American Standards for Nursery Stock sponsored by the American Association of Nurserymen, Inc.
2. Species and variety as specified on the drawings and delivered to the site shall be certified true to their genus, species and variety and as defined within the current edition of International Code of Nomenclature for Cultivated Plants, issued by the International Union of Biological Sciences. Substitutions are not permitted without Contracting Officer's written approval.
3. Plants shall be nursery grown and shall be of varieties specified in the plant list bearing botanical names.
4. All plants shall be legibly tagged with the proper name and shall have a habit of growth which is normal for the species or variety. All plants furnished shall have a good, healthy, well-formed upper growth, well-branched, well-proportioned and be densely foliated when in leaf. All plants shall be in a sound, healthy, vigorous condition, free from objectionable parasites, insects, eggs or larvae, scale, plant diseases and injuries, with all parts moist and showing active green cambium when cut. Plants lacking compactness or proper proportions, and plants injured by too close planting in nursery rows, shall not be accepted. Plants used where uniformity is required, shall be matched as closely as possible.
  - a. Shrubs: All shrubs shall be full, bushy, compact, symmetrical plants of uniform color and texture. Side branches shall possess thick, closely massed foliage to the ground.
  - b. Stock Sizes: All stock measurements - caliper, height



branching level, number of canes and ball sizes shall be in strict accordance with the latest edition of the American Standard for Nursery Stock. Minimum acceptable sizes as specified on 'Sheet 18 - PLANTING PLAN AND DETAILS' of the Drawings.

c. All stock shall be ball and burlap (B&B) or container grown stock. Bareroot stock of any kind is unacceptable unless otherwise indicated on the Drawings.

### 2.2.2 Herbaceous Planting (Seed Mix)

Seed Mix: The seeding mix shall consist of a combination of warm season and cool season grasses; Deertongue (*Dicanthelium clandestinum*), Canada Wild Rye (*Elymus Canadensis*) and Round bushclover (*Lespedeza capitata*) or Wild Indigo (*Baptisia tinctoria*).

Seeding rate: 30 pounds per acre Deertongue, 3 lbs per acre Canada wild rye, and 2 pounds per acre Round Bushclover or Wild Indigo. If hydro-seeding the rate shall be 1.25 the drill rate.

Seeds shall be supplied on the basis of bulk weight, percent purity and percent germination. All seeds shall be certified seed and shall be this years' crop (less than one (1) year old).

### 2.3 PLANT SCHEDULE

Contract Name: Northport Harbor, Village of Northport, NY/ Section 14  
Emergency Shoreline Protection Project.

PLANT NAME	SYMBOL	COMMON NAME	STOCK-TYPE	MIN. SIZE	SPACING/RATE	QUANTITY
Amelanchior canadensis	Ac	Service-berry	Container/B&B	2.5- 3.0ft	10' O.C.	5
Cornus sericea	Cs	Red-stem dogwood	Container/B&B	2.0- 2.5ft	5' O.C.	14
Ilex glabra	Ig	Inkberry	Container/B&B	2.0- 2.5ft	5' O.C.	6
Myrica pensylvanica	Mp	Bayberry	Container/B&B	2.0- 2.5ft	5' O.C.	8
Thuja occidentalis "Emerald"	To	Arbor-vitae	Container/B&B	4.0- 5.0ft	4' O.C.	25
Viburnum dentatum	Vd	Arrow-wood	Container/B&B	2.0- 2.5ft	6' O.C.	13
SEED MIX						
Dicantehlium clandestinum		Deer-tongue			30 lbs/acre	8 lbs
Elymus		Canada			3 lbs/acre	0.8 lbs

Canadensis	wild rye		
Lespedeza capitata	Round bushclover	2 lbs/acre	0.5 lbs

## 2.4 WATER

Water for all planting purposes shall be free of oil, acid, alkalis, salts and other substances harmful to plant life. The Contractor shall, at his expense, make arrangements necessary to ensure an adequate supply of water to meet the needs of this Contract. He shall furnish all necessary hose, equipment, attachments and accessories for the adequate irrigation of all planting and landscaping areas as shall be required to complete the work specified.

## 2.5 ANTI-DESICCANT

Wilt-Pruf, or Vaporguard, an emulsion which shall provide a protective coating over plant surfaces, shall be applied to reduce moisture losses in transplanting and to preserve new planting. It shall dry to a colorless, harmless, non-staining, slightly glossy film that shall wear away completely in approximately three (3) months. Wilt-Pruf shall be delivered to the site in original, unopened containers, bearing the manufacturer's name and guarantee statement of analysis. "Wilt-Pruf" manufactured by Nursery Specialty Products, Incorporated, New York, NY or "Vaporguard" as manufactured by Miller Chemical and Fertilizer Corporation, Hanover, PA, or a product of approved equal quality shall be acceptable.

## 2.6 FERTILIZATION

### 2.6.1 Soil Testing

Soil tests shall be made of the topsoil to determine the soil gradation, total nitrogen ammonia, nitrate, phosphorous, potassium, magnesium, calcium, manganese and zinc levels; and soluble salts, pH, buffer pH and organic matter. Soil tests shall be conducted at a State agricultural laboratory or recognized commercial laboratory, subject to approval by the Contracting Officer. The procedures and materials utilized in collecting the samples shall be as recommended by the laboratory. All laboratory results shall be forwarded to the Contracting Officer. If the soluble salts exceed a value of 0.5 mohms/cm (measurement of electrical conductivity in milliohms/centimeter) or the pH is lower than 5.0, or greater than 8.0, the Contractor shall immediately inform the Contracting Officer to determine the proper action.

### 2.6.2 Lab Requirements

Unless specified on the plans, the laboratory conducting the soil tests shall forward recommendations for soil amendments including lime, based on a target pH of 5.5 - 7.5. If other soil amendments are authorized by the Contracting Officer, such amendments shall be added as recommended by the soil testing laboratory.

### 2.6.3 Fertilizer Analysis

The guarantee analysis of the fertilizer shall have a minimum of fifty (50) percent of the total nitrogen derived from ureaform, furnishing a minimum of twenty-five (25) percent cold water insoluble nitrogen at 25 degrees F,

a minimum activity index of forty (40) percent, and a minimum of three and one-half (3.5) percent urea nitrogen.

#### 2.6.4 Fertilizer Handling

Fertilizers shall be packed in the manufacturer's standard containers. The name of the material, the net weight of the contents, and the manufacturer's name and guaranteed analysis shall appear on each container.

The manufacturer's label of certification indicating compliance with these specifications shall form the basis of acceptance.

### PART 3 EXECUTION

#### 3.1 GENERAL PREPARATION

##### 1. Container-Grown Plants

Plant material designated on the Plant List to be in pots, cans, tubs, flats or boxes shall be considered container-grown plants. Each container shall be of adequate size for its plant material(s) and the plant shall have a sufficient root system to hold earth intact after removal without being "root bound". These plants shall be acclimated to outside conditions (Zone 6) and shall be equal to, and acceptable for, field-grown stock.

##### 2. Balled and Burlapped Plants

Balled and burlapped plants, designated B&B in the list of required plants, shall be adequately balled with firm natural balls of soil in sizes as set forth in USA Standard for Nursery Stock. Balls shall be firmly wrapped with burlap or substitute approved cloth. No balled plant will be acceptable if the ball is cracked or broken or if the stem is loose in the ball, either before or during the process of planting. Balled plants shall be lifted and handled from the bottom of the ball.

##### 3. Plant Measurements

All plant materials shall conform to the measurements specified in the Plant List, which are the minimum size acceptable for each variety. Materials not conforming to the dimensions of the container may be rejected without compensation. Plants shall be measured before pruning, with branches in normal position. Plants larger in size than specified shall be used with the approval of the Contracting Officer, but such a use will make no change in the Contract Price. The extracted root system shall have the majority of the roots in vertical orientation. If the horizontal roots are thick and flattened and the root plug stays in a thick net the shape of the original plug when the media is shaken loose, the tree shall be determined to be "pot bound" and will be considered unacceptable. If the use of larger plants is approved, the ball of earth, container, or spread of roots, shall be increased proportionately. Pruning of branches to obtain the required height or spread shall not be allowed.

Shrubs - The height and spread measurements of shrubs shall be the average of the main body of the plant and not from the greatest dimensions(s).

#### 4. Substitutions

Acceptance of this Contract carries with it the assumption that the Contractor is able to supply all plant materials indicated in the Plant List, on the Drawings and as specified. Substitutions shall not be permitted except at the specific request of the Contracting Officer, or when proof is submitted that a particular plant material is not obtainable after all sources to supply have been investigated.

#### 5. Initial Inspection of Plant Material

At least sixty (60) days prior to planting, the Contracting Officer shall be notified of the source(s) of plant materials. Plant materials shall be inspected, selected, and tagged for identification by the Contracting Officer, with the Contractor, prior to digging and/or moving. Inspection of plant materials by the Contracting Officer shall be for quality, size, shape, color and variety only. Inspection for size of ball or root systems, latent defects and other requirements that may be specified shall be made at the Site during progress of work. No plant shall be dug up or delivered to the Site until the initial inspections under the Contracting Officer's direction have been made and approved. Plant materials shall be subject to refusal at any time and inspection and approval of plant materials at the place of growth shall not in any way waive the Contracting Officer's right of rejection.

All planting shall be performed by personnel familiar with planting procedures under the supervision of a qualified planting foreman, and in accordance with the Drawings and Specifications. Rollers, bulldozers, trucks or any other heavy equipment shall not be permitted to pass over underground utilities, heating and electric conduits, etc. All trench or grade stakes set by others shall be maintained until their removal is approved by the Contracting Officer. The furnishing and planting of any plant materials shall be interpreted to include: excavating, the digging of holes, provision of soil planting mixture, sand, mulch, fertilizer and lime, (if recommended by the proper Agricultural Agent, State Laboratory and/or Contracting Officer, after tests of a typical loam sample), furnishing at the proper time of the year a plant of the specified size with its roots in the specified manner, the labor of planting, pruning, watering, spraying, maintaining, replacing, guaranteeing and all other necessary incidental work in accordance with the Plans and Specifications to the satisfaction of the Contracting Officer. All plants shall be inspected and approved at the site by the Contracting Officer before excavation and planting. Rejected material shall be immediately removed from the site and replaced with acceptable material at no additional cost to the Contracting Officer. Existing topsoil shall be used only if approved by the Contracting Officer.

#### 3.2 UNDERGROUND OBSTRUCTIONS TO PLANTING

Prior to excavation of planting areas or plant pits, or to driving or placing of stakes, the Contractor shall ascertain the location of all electric cables, conduits, utility lines, drainage lines and supply lines, so that proper precautions shall be taken not to disturb or damage any

sub-surface improvements. If any are encountered, the Contractor shall promptly notify in writing, the Contracting Officer, who shall arrange to relocate the plant material. Damage to utility lines shall be repaired at the Contractor's expense at no additional cost to the Government.

Remove all miscellaneous debris below the ground surface and dispose of according to the specifications. If ledges, stones, boulders, foundations or other obstructions are encountered and cannot be broken and removed by hand in the course of digging plant pits of the specified size, the Contractor shall promptly notify the Contracting Officer, who may designate other locations for the plant materials. Where locations cannot be changed, obstructions shall be removed to a depth of not less than one (1) foot below the required pit depth.

### 3.3 CARE OF EXISTING PLANTING

Existing trees, shrubs, planting beds, grass areas, pavement and curbs in areas near construction shall be effectively protected during construction operations, by the placement of snow-fencing at the drip line. Snow fence shall be placed around trees designated as "protected" at a distance of not less than five (5) feet from the trunk. Any necessary grading or digging around existing plants shall be done with extreme care to prevent damage to roots. Barricades and other devices used to protect existing planting shall be removed only after all construction is completed. Any damage caused by planting operations to existing materials or improvements, on or adjacent to the site, is the responsibility of the Contractor, and shall be promptly repaired at the direction of the Contracting Officer, and at the Contractor's expense.

### 3.4 PLANTING

#### 3.4.1 Pit Preparation

Planting pits shall be prepared only within areas where a minimum depth of one foot of topsoil and circumference of 3 feet of topsoil has been laid beneath the geotextile fabric. Topsoil shall be a loam, sandy loam, sandy clay loam or loamy sand. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash or any materials larger than 1.5 inches in diameter.

#### 3.4.2 Shrub Planting

Planting pits shall have pits dug and soil prepared prior to moving plant materials to the sites whenever possible, to expedite planting upon delivery, to ensure protection from drying elements and physical damage. Circular pits shall be excavated for all plants. Planting pits, beds and areas shall be excavated with vertical sides and flat bottoms to the shapes, areas and depths shown on the Drawings or as specified, backfilled with planting mixture, and compacted in the area directly beneath the plant. Proper drainage is required and subsoil conditions retaining water in planting pits shall be corrected as directed by the Contracting Officer.

#### 3.4.3 Seeding

Immediately after fill within the geotextile cells, the soil both within and outside of the geocells shall be tilled manually to a depth of four plowing and smoothed by harrowing or dragging. The soil shall be left in this scarified condition and shall not be smooth-rolled. Seeding shall

occur on moist soils.

#### 3.4.4 Personnel

All planting shall be performed by personnel familiar with the accepted procedure of planting and under the constant supervision of a qualified planting foreman.

#### 3.4.5 Quality

All planting is to be done as shown on drawings and as specified herein and in strict accordance with standard horticultural practices.

### 3.5 PLANTING SEASONS AND CONDITIONS

#### 3.5.1 Seeding

Seeding window shall be limited to March 15 to June 15. Seeding prior to April 15 will allow stratification on site. If seeding occurs late in spring (April 15 or later) pre-stratified seeds shall be used. As most seed supply firms do not provide stratified seed it shall be the responsibility of the Contractor that stratification of the seed occurs prior to seeding. The Contracting Officer's Representative reserves the right to conduct germination tests of each bag.

Seeding shall occur on moist soils. The Contractor shall notify the Contracting Officer's Representative at least forty eight (48) hours in advance of when sowing is scheduled to begin and shall not proceed with the work until permission to do so has been obtained. If determined by the Contractor or Contracting Officer's Representative as necessary the area shall be watered prior to seeding. All watering costs shall be incidental to this item.

#### 3.5.2 Shrub Planting

Shrub planting window shall be limited to April 15 to June 15 and September 15 to October 30.

Planting shall progress only under favorable weather conditions, during the proper season for such work, and in accordance with locally accepted practice. Planting shall not be permitted when the ground is frozen or extremely moist. At the option of and on responsibility of, the Contractor, planting may start earlier or continue later than specified without additional compensation, subject to approval of the Contracting Officer, regarding time of work and methods of operation.

### 3.6 PLANTING SCHEDULE

1. Contractor shall submit planting schedule indicating proposed nursery sources and anticipated installation schedule to the Contracting Officer's Representative for review and approval.
2. Planting schedule shall be submitted at the same time as overall construction program/scheduling.
3. Schedule the dates for each type of landscape work during normal seasons for such work in each area of the site. Correlate with specified maintenance periods to provide maintenance until acceptance by the Contracting Officer's Representative. Once accepted, revise

dates only as approved in writing, after documentation of reasons for delays.

4. Coordinate with approved nurseries to secure and confirm installation dates of all plant material after Contracting Officer's Representative's acceptance of planting schedule.

### 3.7 SHIPMENT

1. The Contractor shall notify the Contracting Officer's Representative at least two (2) days in advance concerning delivery of the plant materials.

2. The Contractor shall obtain and pay for all certificates of inspections that may be required by Federal, State or other authorities to accompany each shipment of plant materials.

3. Plant materials shall be prepared for shipment in a manner that shall not cause serious damage to branches, shape and/or future development of the plant. No plant shall at any time be bound with wire or rope so as to damage the bark or break branches. Particular care shall be exercised in the digging, binding and temporary wrapping during transplant of all plant materials to insure safe loading, shipment and handling for the transfer from growing locations to planting locations shown on the Drawings. Plants shall not be pruned prior to delivery, except upon request of, and under supervision of the Contracting Officer.

### 3.8 ANTI-DESICCANT

Immediately after planting, all plants except coniferous evergreens shall be sprayed with an anti-desiccant, using an approved power sprayer for applying an adequate film over trunks, branches, twigs and foliage. Anti-desiccants shall be used in accordance with the manufacturer's directives and as amended by the Contracting Officer.

### 3.9 PLANT PROTECTION

All plants roots and earth balls shall be kept in a moist condition and shall be thoroughly protected at all times from sun and drying winds. Plant materials shall be promptly planted upon arrival to the site, and if storage is necessary, the following procedures shall be followed at once:

Container grown plants shall be heeled in by setting in the ground in a protected location and covered with moist soil or mulch to the top of the root systems. Plants shall be watered and maintained as necessary until planting.

### 3.10 LAYOUT

Plant material locations and bed outlines shall be staked on the project site by the Contractor and approved by the Contracting Officer's Representative before any plant pits or beds are excavated. Plant material locations may be adjusted by the Contracting Officer's Representative to meet field conditions.

### 3.11 INSTALLATION OF SEEDS

1. Container-grown plants shall be handled and moved only by the ball

or container. Unless otherwise indicated, plants shall be placed in the center of pits. Plants shall be set plumb and held in position until sufficient soil has been firmly placed around roots or ball. Planting shall be to such a depth that the finish grade level of the plant, after settlement, shall be the same at which the plant previously grew. Plant material shall be spaced as indicated on the Drawings or as directed by the Contracting Officer's Representative. Plants shall be faced to give best appearance or relationship to adjacent structures. Fertilizer in tablet form shall be placed prior to backfilling and in accordance with the manufacturer's specifications.

2. Container-grown stock shall be removed from containers without damaging plant or root system. Planting shall be completed as specified for balled or burlapped plants.

### 3.12 WATERING

Plants shall be flooded with water twice within the first twenty-four (24) hours after planting. The water shall reach the level of maximum root depth. Thereafter water all plant materials slowly until the root area is thoroughly soaked as many times as seasonable conditions require during the maintenance period.

### 3.13 PRUNING

1. Pruning shall not be done before delivery of plants, but only upon completion of planting operations, and according to standard horticultural practices. All pruning shall be done under the Contracting Officer's Representative's supervision using only clean, sharp tools. Pruning shall be limited to the minimum necessary to remove dead wood, suckers, broken or injured twigs and branches, rubbing or crossing limbs and superfluous growth next to trees or shrubs, to admit sunlight and air circulation and to compensate for loss of roots during transplanting. All cuts shall be made flush, leaving no stubs. When branches are cut back, cuts shall be made close to a bud. Central leaders, main limbs or trunks shall not be cut back.

2. Pruning shall never exceed one third (1/3) of the branching structure, and shall be done in such a manner as not to change the natural character or shape of the plant, unless otherwise directed by the Contracting Officer's Representative. On all cuts over three quarters inch (3/4") in diameter, and in the case of bruises and scars, the injured cambium shall be traced to living tissues and removed, wounds shall be smoothed so as not to retain water, and the treated area(s) shall be promptly coated with an approved tree wound compound, all exposed living tissues being covered.

CLEAN-UP: Each site shall be maintained in a neat, clean, presentable and safe condition throughout the progress of work until the final acceptance. Upon completion of planting and landscaping, excess soils, debris, materials, rubbish, stones, wood forms and other refuse not previously cleaned up shall be removed from the site and promptly disposed of as directed by the Contracting Officer's Representative. The site shall be left in a safe, clean, presentable condition with all traces of work removed to the satisfaction of the Contracting Officer.



### 3.14 MAINTENANCE, GUARANTEE AND REPLACEMENTS

#### 3.14.1 Maintenance

The contractor shall be held responsible for the maintenance of all work and parts thereof, prior to the final acceptance of the Contract. Maintenance shall begin immediately after each plant material is planted, and shall continue in accordance with the following requirements through the guarantee period.

##### General

Planting areas and plant materials shall be protected at all times against damage for the duration of the maintenance period. Any plant material damaged or injured, shall be treated or replaced as directed by the Contracting Officer's Representative, at no additional cost to the Government. Work shall not be done within, adjacent to, or over any plant or planting areas without proper protection to plant materials. Damage to planting areas or plant materials during the maintenance period shall be the Contractor's responsibility and shall be promptly repaired.

##### New Planting

New planting shall be protected and maintained from time of inspection and shall continue until Final Acceptance unless otherwise specified. Maintenance shall include watering, weeding, cultivating, mulching, spraying, pruning, removing dead materials, replacing dead plants during the specified planting season, resetting plants to proper grade or upright position, restoring planting saucers, and other necessary horticultural operations that may be required for the proper growth of all plant materials. Dead plant material shall be removed and dead branches pruned as soon as they appear.

##### Spraying

During the maintenance period and until Final Acceptance the Contractor shall do all seasonal spraying as necessary to keep plant materials free from insects and diseases. The Contractor shall furnish all materials and equipment and use all spray materials with extreme caution in regard to safety and health. Caution and instructions for spray materials shall be carefully read and observed.

Insecticides, fungicides and their containers shall not be left within reach of children or animals and all spray wastes and containers shall be removed immediately from the site. Sprays and drippings shall promptly be washed clean from all surfaces not intended for application.

Sprays shall be furnished and applied thoroughly, with assurance that recommended rates of the correct chemicals are used at proper time in the prescribed manner, for the complete eradication and control of disease and insects. All spraying shall be done at times when wind does not exceed a velocity of five (5) miles per hour.

Responsibility for Maintenance: The Contractor's responsibility for maintenance shall cease at the time of Final Acceptance, provided all plant materials and related items are in satisfactory condition.

## 3.14.2 Replacements

1. All plant materials under this Contract that are unsightly, unhealthy, dead, excessively pruned, lost their natural shape due to dead branches, or not in a vigorous, thriving condition, as determined by the Contracting Officer's Representative, during and at the end of the guarantee period, shall be removed promptly from the site. These, and any other plants missing due to the Contractor's negligence, shall be replaced and/or added as conditions permit, during the normal planting season(s). If any questions arise regarding the condition and satisfactory establishment of a rejected plant, the Contractor may elect to allow such a plant to remain through another complete growing season, at which time the rejected plant, if found to be dead, in an unhealthy or badly impaired condition, shall be replaced. Replanted material shall be given a six (6) month guarantee, beginning at the time of preliminary acceptance of the replanted material.

2. Replacements shall consist of plant materials of the same kind and size specified on the Plant List selected in the field by the Contracting Officer's Representative prior to digging and subject to all requirements in these Specifications. Replacements shall be made at the Contractor's expense.

3. The Contractor shall be liable for any damage to property including grass areas, pavements, curbs, etc., caused by replacement operations, and he shall without additional charge, restore to their original conditions all areas, and construction disturbed or damaged by him in pursuing the work of this Contract to the satisfaction of the Contracting Officer's Representative.

## 3.15 INSPECTION, QUALITY CONTROL AND ACCEPTANCE

1. Quality Control: The Contractor shall establish and maintain a quality control system for operation under this section to assure compliance with contract requirements and record his inspections under this system, including, but not limited to the following:

- a. Quality of plant material
- b. Plant storage
- c. Planting procedures
- d. Quality of fertilizer
- e. Fertilizer operations
- f. Plant replacement
- g. Plant maintenance

A copy of the records of inspection, as well as records of corrective action taken, will be furnished to the Government as directed by the Contracting Officer.

2. Inspection & Acceptance at the End of the Guarantee Period: After the maintenance and guarantee period, and upon written application by the Contractor, the Contracting Officer's Representative shall make a final inspection of all work to determine the final acceptability of completed work. Any dead or missing plant materials shall be replaced during the next planting season. Plants whose conditions are questionable shall also be replaced except where, in the opinion of the Contracting Officer's Representative, it is advisable to extend the guarantee period another full growing season, at which time another inspection shall be made to determine acceptance or rejection. If a

substantial number of plant materials are unsatisfactory or dead at the time of inspection, acceptance shall not be granted and the Contractor's responsibility for maintenance of all plant materials shall be extended until replacements are made with the remaining work subject to re-inspection before acceptance. Replacements shall conform in all respects to the Specifications, and shall be planted in the same manner as the originally planted material; guarantee period of replacement plants shall be six (6) months.

-- End of Section --

## SECTION 03307A

## CONCRETE FOR MINOR STRUCTURES

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ACI INTERNATIONAL (ACI)

ACI 308R	(2001) Guide to Curing Concrete
ACI 318/318R	(2002) Building Code Requirements for Structural Concrete and Commentary
ACI 318M/318RM	(2002) Metric Building Code Requirements for Structural Concrete and Commentary
ACI 347	(2001) Guide to Formwork for Concrete

## ASTM INTERNATIONAL (ASTM)

ASTM A 185	(2002) Steel Welded Wire Reinforcement, Plain, for Concrete
ASTM A 615/A 615M	(2003a) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 143/C 143M	(2003) Slump of Hydraulic Cement Concrete
ASTM C 150	(2002ae1) Portland Cement
ASTM C 171	(2003) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 231	(2003) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2001) Air-Entraining Admixtures for Concrete
ASTM C 309	(2003) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 31/C 31M	(2003a) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(2003) Concrete Aggregates
ASTM C 39/C 39M	(2003) Compressive Strength of Cylindrical Concrete Specimens

ASTM C 494/C 494M	(1999ae1) Chemical Admixtures for Concrete
ASTM C 595	(2003) Blended Hydraulic Cements
ASTM C 595M	(1997) Blended Hydraulic Cements (Metric)
ASTM C 618	(2003) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 685	(2000) Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C 920	(2002) Elastomeric Joint Sealants
ASTM C 94/C 94M	(2003a) Ready-Mixed Concrete
ASTM D 1752	(1984; R 1996e1) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D 75	(2003) Sampling Aggregates
ASTM D 98	(1998) Calcium Chloride
ASTM E 96	(2000e1) Water Vapor Transmission of Materials

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
COE CRD-C 572	(1974) Specifications for Polyvinylchloride Waterstops

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

### SD-03 Product Data

Curing Materials; G  
Reinforcing Steel; G

Manufacturer's literature is available from suppliers which demonstrates compliance with applicable specifications for the above materials.

Batching and Mixing Equipment; G

Batching and mixing equipment will be accepted on the basis of manufacturer's data which demonstrates compliance with the applicable specifications.

### Conveying and Placing Concrete

The methods and equipment for transporting, handling, depositing, and consolidating the concrete shall be submitted prior to the first concrete placement.

### SD-06 Test Reports

#### Aggregates; G

Aggregates will be accepted on the basis of certificates of compliance and test reports that show the material(s) meets the quality and grading requirements of the specifications under which it is furnished.

#### Concrete Mixture Proportions; G

Ten days prior to placement of concrete, the contractor shall submit the mixture proportions that will produce concrete of the quality required. Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

### SD-07 Certificates

#### Cementitious Materials; G

Certificates of compliance attesting that the concrete materials meet the requirements of the specifications shall be submitted in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE". Cementitious material will be accepted on the basis of a manufacturer's certificate of compliance, accompanied by mill test reports that the material(s) meet the requirements of the specification under which it is furnished.

#### Aggregates; G

Aggregates will be accepted on the basis of certificates of compliance and tests reports that show the material(s) meet the quality and grading requirements of the specifications under which it is furnished.

## 1.3 DESIGN AND PERFORMANCE REQUIREMENTS

The Contracting Officer will maintain the option to sample and test joint sealer, joint filler material, aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary to assist the Contracting Officer in procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143/C 143M and ASTM C 231, respectively, when cylinders are molded. Compression test specimens will be made, cured, and transported in accordance with ASTM C 31/C 31M. Compression test specimens will be tested in accordance with ASTM C 39/C 39M. Samples for strength tests will be taken not less than once each shift in which concrete is produced. A minimum of three specimens will be made from each sample; two will be tested at 28 days (90 days if pozzolan is used) for acceptance, and one will be tested at 7 days for information.

### 1.3.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength,  $f'_c$ , and no individual acceptance test result falls below  $f'_c$  by more than 500 psi.

### 1.3.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces except those specified to receive a Class "D" finish. A Class "D" finish shall apply to all surfaces which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 347.

### 1.3.3 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor.

Mixture proportions shall include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength  $f'_c$  shall be 3,000 psi at 28 days (90 days if pozzolan is used). The maximum nominal size coarse aggregate shall be 3/4 inch, in accordance with ACI 318/318R. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 5 inches. The maximum water cement ratio shall be 0.50.

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Cementitious Materials

Cementitious materials shall conform to the appropriate specifications listed:

##### 2.1.1.1 Portland Cement

ASTM C 150, Type II.

##### 2.1.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

#### 2.1.2 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33 Class Designations 4M or better.

#### 2.1.3 Water

Water for mixing and curing shall be fresh, clean, potable, and free from

injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

#### 2.1.4 Reinforcing Steel

Reinforcing steel bar shall conform to the requirements of ASTM A 615/A 615M, Grade 60. Welded steel wire fabric shall conform to the requirements of ASTM A 185. Details of reinforcement not shown shall be in accordance with ACI 318/318R, Chapters 7 and 12.

#### 2.1.5 Joint Sealants - Field Molded Sealants

Joint sealants - field molded sealants shall conform to ASTM C 920, Type M, Grade NS, Class 25, use NT for vertical joints and Type M, Grade P, Class 25, use T for horizontal joints. Bond-breaker material shall be polyethylene tape, coated paper, metal foil, or similar type materials. The backup material shall be compressible, nonshrink, nonreactive with the sealant, and a nonabsorptive material such as extruded butyl or polychloroprene foam rubber. Immediately prior to installation of field-molded sealants, the joint shall be cleaned of all debris and further cleaned using water, chemical solvents, or other means as recommended by the sealant manufacturer or directed.

#### 2.1.6 Formwork

The design and engineering of the formwork as well as its construction, shall be the responsibility of the Contractor.

#### 2.1.7 Form Coatings

Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed.

#### 2.1.8 Vapor Barrier

Vapor barrier shall be polyethylene sheeting with a minimum thickness of 6 mils or other equivalent material having a vapor permeance rating not exceeding 0.5 perms as determined in accordance with ASTM E 96.

#### 2.1.9 Curing Materials

Curing materials shall conform to the following requirements.

##### 2.1.9.1 Impervious Sheet Materials

Impervious sheet materials, ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

##### 2.1.9.2 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A.

### PART 3 EXECUTION

#### 3.1 PREPARATION

##### 3.1.1 General

Construction joints shall be prepared to expose coarse aggregate, and the



surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the Contracting Officer prior to placing.

#### 3.1.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed the metal part of the tie will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

#### 3.1.3 Formwork Installation

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

#### 3.1.4 Vapor Barrier Installation

Vapor barriers shall be applied over gravel fill. Edges shall be lapped not less than 6 inches. All joints shall be sealed with pressure-sensitive adhesive not less than 2 inches wide. The vapor barrier shall be protected at all times to prevent injury or displacement prior to and during concrete placement.

#### 3.1.5 Production of Concrete

##### 3.1.5.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94/C 94M except as otherwise specified.

##### 3.1.5.2 Concrete Made by Volumetric Batching and Continuous Mixing

Concrete made by volumetric batching and continuous mixing shall conform to ASTM C 685.

##### 3.1.5.3 Batching and Mixing Equipment

The contractor shall have the option of using an on-site batching and mixing facility. The facility shall provide sufficient batching and mixing equipment capacity to prevent cold joints. The method of measuring materials, batching operation, and mixer shall be submitted for review.

#### 3.2 CONVEYING AND PLACING CONCRETE

Conveying and placing concrete shall conform to the following requirements.

### 3.2.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval. When concrete is mixed and/or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients.

Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

### 3.2.2 Consolidation

Each layer of concrete shall be consolidated by internal vibrating equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

### 3.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the contractor.

### 3.2.4 Hot-Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308R, is expected to exceed 0.2 pound per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

### 3.3 FORM REMOVAL

Forms shall not be removed before the expiration of 24 hours after concrete placement except where otherwise specifically authorized. Supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

### 3.4 FINISHING

#### 3.4.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

#### 3.4.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

#### 3.4.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch for a float finish as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water or cement shall be added to the surface during finishing.

##### 3.4.3.1 Float Finish

All surfaces shall be float finished and shall be screeded and darried or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

##### 3.4.3.2 Expansion and Contraction Joints

Expansion and contraction joints shall be made in accordance with the details shown or as otherwise specified. Provide 1 inch thick transverse expansion joints where new work abuts an existing concrete. Expansion joints shall be provided at a maximum spacing of 60 feet on center in the concrete caps, unless otherwise indicated. Contraction joints shall be provided at a maximum spacing of 30 linear feet in concrete caps, unless otherwise indicated. Contraction joints shall be cut at a minimum of 1 inch deep with a jointing tool after the surface has been finished.

### 3.5 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

- a. Continuous sprinkling or ponding.
- b. Application of absorptive mats or fabrics kept continuously wet.
- c. Application of sand kept continuously wet.
- d. Application of impervious sheet material conforming to ASTM C 171.
- e. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

### 3.6 TESTS AND INSPECTIONS

#### 3.6.1 General

The individuals who sample and test concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

#### 3.6.2 Inspection Details and Frequency of Testing

##### 3.6.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor to certify that it is ready to receive concrete.

##### 3.6.2.2 Air Content

Air content shall be checked at least once during each shift that concrete is placed. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

##### 3.6.2.3 Slump

Slump shall be checked once during each shift that concrete is produced. Samples shall be obtained in accordance with ASTM C 172 and tested in

accordance with ASTM C 143/C 143M.

#### 3.6.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

#### 3.6.3 Action Required

##### 3.6.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available. Placing shall not be continued if any pile is inadequately consolidated.

##### 3.6.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

##### 3.6.3.3 Slump

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

#### 3.6.4 Reports

The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered within 3 days after the end of each weekly reporting period. See Section 01451A CONTRACTOR QUALITY CONTROL.

-- End of Section --

## SECTION 05055A

## METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M (2002) Structural Welding Code - Steel

## ASME INTERNATIONAL (ASME)

ASME B4.1 (1967; R 1999) Preferred Limits and Fits for Cylindrical Parts

ASME B46.1 (1995) Surface Texture, (Surface Roughness, Waviness and Lay)

ASME BPVC SEC IX (2001) Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications

## ASTM INTERNATIONAL (ASTM)

ASTM A 123/A 123M (2002) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 325 (2002) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

ASTM A 325M (2003) Structural Bolts, Steel, Heat Treated, 830Mpa Minimum Tensile Strength (Metric)

ASTM A 490 (2002) Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength

ASTM A 514/A 514M (2000a) High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding

ASTM A 780 (2001) Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The

following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings; G

Detail drawings for metalwork and machine work including description of connections, prior to fabrication.

Erection Plan; G

Including description of temporary supports.

SD-03 Product Data

Welding of Structural Steel; G

Schedules of welding procedures for steel structures, prior to commencing fabrication.

Structural Steel Welding Repairs; G

Welding repair plans for steel, prior to making repairs.

Materials Orders

Copies of purchase orders, mill orders, shop orders and work orders for materials, prior to the use of the materials in the work.

Materials List

Materials list for fabricated items, at the time of submittal of detail drawings.

Shipping Bill

Shipping bill with the delivery of finished pieces to the site.

SD-06 Test Reports

Tests, Inspections, and Verifications

Certified test reports for materials with all materials delivered to the site.

SD-07 Certificates

Qualification of Welders and Welding Operators

Certifications for welders and welding operators prior to commencing fabrication.

Application Qualification for Steel Studs; G

Certified reports for the application qualification for steel studs prior to commencing fabrication.

## Welding of Aluminum; G

Certified report for aluminum welding qualification tests prior to commencing welding.

## 1.3 DETAIL DRAWINGS

Detail drawings for metalwork and machine work shall include catalog cuts, templates, fabrication and assembly details and type, grade and class of material as appropriate. Elements of fabricated items inadvertently omitted on contract drawings shall be detailed by the fabricator and indicated on the detail drawings.

## 1.4 QUALIFICATION OF WELDERS AND WELDING OPERATORS

The Contractor shall certify that the qualification of welders and welding operators and tack welders who will perform structural steel welding have been qualified for the particular type of work to be done in accordance with the requirements of AWS D1.1/D1.1M, Section 5, prior to commencing fabrication. The certificate shall list the qualified welders by name and shall specify the code and procedures under which qualified and the date of qualification. Prior qualification will be accepted if welders have performed satisfactory work under the code for which qualified within the preceding three months. The Contractor shall require welders to repeat the qualifying tests when their work indicates a reasonable doubt as to proficiency. Those passing the requalification tests will be recertified. Those not passing will be disqualified until passing. All expenses in connection with qualification and requalification shall be borne by the Contractor.

## 1.5 STORAGE AND HANDLING

Metal fabrications shall be handled in such a manner that they may be transported and unloaded without being over-stressed, deformed or otherwise damaged. Metal fabrications and packaged materials shall be protected from corrosion and deterioration and shall be stored in a dry area. Materials stored outdoors shall be supported above ground surfaces on wood runners and protected with effective and durable covers approved by the Contracting Officer. Metal fabrications shall not be placed in or on a structure in a manner that might cause distortion or damage to the fabrication. The Contractor shall repair or replace damaged metal fabrications or materials as directed by the Contracting Officer.

## PART 2 PRODUCTS

## 2.1 MATERIALS

## 2.1.1 Materials Orders

The Contractor shall furnish 2 copies of purchase orders, mill orders, shop orders and work orders for all materials orders and items used in the work.

Where mill tests are required purchase orders shall contain the test site address and the name of the testing agency.

## 2.1.2 Materials List

The Contractor shall furnish a materials list of the materials to be used in the fabrication of each item.



### 2.1.3 Shipping Bill

The Contractor shall furnish a shipping bill or memorandum of each shipment of finished pieces or members to the project site giving the designation mark and weight of each item, the number of items, the total weight, and the car initial and number if shipped by rail in carload lots. Duplicate copies of shipping bills shall be distributed promptly to the Contracting Officer.

## 2.2 FABRICATION

### 2.2.1 Structural Fabrication

Material must be straight before being laid off or worked. If straightening is necessary it shall be done by methods that will not impair the metal. Sharp kinks or bends shall be cause for rejection of the material. Material with welds will not be accepted except where welding is definitely specified, indicated or otherwise approved. Bends shall be made by approved dies, press brakes or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal and it shall be allowed to cool in a manner that will not impair the original properties of the metal. Proposed flame cutting of material other than structural steel shall be subject to approval and shall be indicated on detail drawings. Shearing shall be accurate and all portions of the work shall be neatly finished. Corners shall be square and true unless otherwise shown. Re-entrant cuts shall be filleted to a minimum radius of 3/4 inch unless otherwise approved. Finished members shall be free of twists, bends and open joints. Bolts, nuts and screws shall be tight.

#### 2.2.1.1 Dimensional Tolerances for Structural Work

Dimensions shall be measured by an approved calibrated steel tape of approximately the same temperature as the material being measured. The overall dimensions of an assembled structural unit shall be within the tolerances indicated on the drawings or as specified in the particular section of these specifications for the item of work. Where tolerances are not specified in other sections of these specifications or shown, an allowable variation of 1/32 inch is permissible in the overall length of component members with both ends milled and component members without milled ends shall not deviate from the dimensions shown by not more than 1/16 inch for members 30 feet or less in length and by more than 1/8 inch for members over 30 feet in length.

#### 2.2.1.2 Structural Steel Fabrication

Structural steel may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Surfaces and edges to be welded shall be prepared in accordance with AWS D1.1/D1.1M, Subsection 3.2. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Hand-guided cuts which are to be exposed or visible shall be chipped, ground or machined to sound metal.

## 2.2.2 Welding

### 2.2.2.1 Welding of Structural Steel

a. Welding Procedures for Structural Steel - Welding procedures for structural steel shall be prequalified as described in AWS D1.1/D1.1M, Subsection 5.1 or shall be qualified by tests as prescribed in AWS D1.1/D1.1M, Section 5. Properly documented evidence of compliance with all requirements of these specifications for previous qualification tests shall establish a welding procedure as prequalified. For welding procedures qualified by tests, the test welding and specimen testing must be witnessed and the test report document signed by the Contracting Officer. Approval of any welding procedure will not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed necessary or desirable by the Contractor Officer. The Contractor shall submit a complete schedule of welding procedures for each steel structure to be welded. The schedule shall conform to the requirements specified in the provisions AWS D1.1/D1.1M, Sections 2, 3, 4, 7 and 9 and applicable provisions of Section 10. The schedule shall provide detailed procedure specifications and tables or diagrams showing the procedures to be used for each required joint. Welding procedures must include filler metal, preheat, interpass temperature and stress-relief heat treatment requirements. Each welding procedure shall be clearly identified as being prequalified or required to be qualified by tests. Welding procedures must show types and locations of welds designated or in the specifications to receive nondestructive examination.

b. Welding Process - Welding of structural steel shall be by an electric arc welding process using a method which excludes the atmosphere from the molten metal and shall conform to the applicable provisions of AWS D1.1/D1.1M, Sections 1 thru 7, 9, 10 and 11. Welding shall be such as to minimize residual stresses, distortion and shrinkage.

#### c. Welding Technique

(1) Filler Metal - The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used or shall be as shown where a specific choice of AWS specification allowables is required. The AWS designation of the electrodes to be used shall be included in the schedule of welding procedures. Only low hydrogen electrodes shall be used for manual shielded metal-arc welding regardless of the thickness of the steel. A controlled temperature storage oven shall be used at the job site as prescribed by AWS D1.1/D1.1M, Subsection 4.5 to maintain low moisture of low hydrogen electrodes.

(2) Preheat and Interpass Temperature - Preheating shall be performed as required by AWS D1.1/D1.1M, Subsection 4.2 and 4.3 or as otherwise specified except that the temperature of the base metal shall be at least 70 degrees F. The weldments to be preheated shall be slowly and uniformly heated by approved means to the prescribed temperature, held at that temperature until the welding is completed and then permitted to cool slowly in still air.

(3) Stress-Relief Heat Treatment - Where stress relief heat treatment is specified or shown, it shall be in accordance with the requirements of AWS D1.1/D1.1M, Subsection 4.4 unless otherwise authorized or directed.

d. Workmanship - Workmanship for welding shall be in accordance with AWS D1.1/D1.1M, Section 3 and other applicable requirements of these specifications.

(1) Preparation of Base Metal - Prior to welding the Contractor shall inspect surfaces to be welded to assure compliance with AWS D1.1/D1.1M, Subsection 3.2.

(2) Temporary Welds - Temporary welds required for fabrication and erection shall be made under the controlled conditions prescribed for permanent work. Temporary welds shall be made using low-hydrogen welding electrodes and by welders qualified for permanent work as specified in these specifications. Preheating for temporary welds shall be as required by AWS D1.1/D1.1M for permanent welds except that the minimum temperature shall be 120 degrees F in any case. In making temporary welds arcs shall not be struck in other than weld locations. Each temporary weld shall be removed and ground flush with adjacent surfaces after serving its purpose.

(3) Tack Welds - Tacks welds that are to be incorporated into the permanent work shall be subject to the same quality requirements as the permanent welds and shall be cleaned and thoroughly fused with permanent welds. Preheating shall be performed as specified above for temporary welds. Multiple-pass tack welds shall have cascaded ends. Defective tack welds shall be removed before permanent welding.

#### 2.2.2.2 Welding of Steel Castings

Unsound material shall be removed from the surfaces of steel castings to be incorporated into welded connections by chipping, machining, air-arc gouging or grinding. Major connections designed for transfer of stresses shall not be welded if the temperature of the casting is lower than 100 degrees F. Castings containing over 0.35 percent carbon or over 0.75 percent manganese shall be preheated to a temperature not to exceed 450 degrees F and welding shall be accomplished while the castings are maintained at a temperature above 350 degrees F. Welding will not be permitted on castings containing carbon in excess of 0.45 percent except on written authorization. Castings requiring welding repairs after the first annealing and castings involving welding fabrication shall be stress-relieved annealed prior to receiving final machining unless otherwise permitted.

#### 2.2.2.3 Welding of Steel Studs

The procedures for welding steel studs to structural steel, including mechanical, workmanship, technique, stud application qualification, production quality control and fabrication and verification inspection procedures shall conform to the requirements of AWS D1.1/D1.1M, Section 7, except as otherwise specified.

a. Application Qualification for Steel Studs - As a condition of

approval of the stud application process, the Contractor shall furnish certified test reports and certification that the studs conform to the requirements of AWS D1.1/D1.1M, Subsections 7.2 and 7.3, certified results of the stud manufacturer's stud base qualification test, and certified results of the stud application qualification test as required by AWS D1.1/D1.1M, Subsection 7.6, except as otherwise specified.

b. Production Quality Control - Quality control for production welding of studs shall conform to the requirements of AWS D1.1/D1.1M, Subsection 7.7, except as otherwise specified. Studs on which pre-production testing is to be performed shall be welded in the same general position as required on production studs (flat, vertical, overhead or sloping). If the reduction of the length of studs becomes less than normal as they are welded, welding shall be stopped immediately and not resumed until the cause has been corrected.

### 2.2.3 Bolted Connections

#### 2.2.3.1 Bolted Structural Steel Connections

Bolts, nuts and washers shall be of the type specified or indicated. All nuts shall be equipped with washers except for high strength bolts. Beveled washers shall be used where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where the use of high strength bolts is specified or indicated the materials, workmanship and installation shall conform to the applicable provisions of ASTM A 325 or ASTM A 490.

a. Bolt Holes - Bolt holes shall be accurately located, smooth, perpendicular to the member and cylindrical.

(1) Holes for regular bolts shall be drilled or subdrilled and reamed in the shop and shall not be more than 1/16 inch larger than the diameter of the bolt.

(2) Holes for fitted bolts shall be match-reamed or drilled in the shop. Burrs resulting from reaming shall be removed. The threads of bolts shall be entirely outside of the holes. The body diameter of bolts shall have tolerances as recommended by ASME B4.1 for the class of fit specified. Fitted bolts shall be fitted in reamed holes by selective assembly to provide an LN-2 fit.

(3) Holes for high strength bolts shall have diameters of not more than 1/16 inch larger than bolt diameters. If the thickness of the material is not greater than the diameter of the bolts the holes may be punched. If the thickness of the material is greater than the diameter of the bolts the holes may be drilled full size or subpunched or subdrilled at least 1/8 inch smaller than the diameter of the bolts and then reamed to full size. Poor matching of holes will be cause for rejection. Drifting occurring during assembly shall not distort the metal or enlarge the holes. Reaming to a larger diameter of the next standard size bolt will be allowed for slight mismatching.

### 2.2.4 Patterns

Care shall be taken to avoid sharp corners or abrupt changes in cross section and ample fillets shall be used in the construction of patterns.

Draft and increases in pattern thicknesses shall be added as required to conform to the standard foundry practice applied and as necessary to ensure that all metal thicknesses of the finished castings conform to the dimensions shown and are within the tolerances specified in paragraph INSPECTION OF STEEL CASTINGS.

#### 2.2.5 Castings

Each casting shall bear cast or stamped mark numbers. Castings weighing more than 500 required pounds shall also bear cast or stamped heat numbers.

Deviations from the dimensions of castings shown shall not exceed amounts that will impair the strength of castings by more than 10 percent as computed from the dimensions shown. Dimensions of castings shown on approved detail drawings shall be finished dimensions. Castings that are warped or otherwise distorted or that are oversize to an extent that will interfere with proper fit with other parts of the machinery or structure will be rejected. The structure of metal in castings shall be homogeneous and free from excessive nonmetallic inclusions. Excessive segregation of impurities or alloys at critical points in castings will be cause for rejection. Repairs to castings shall not be made prior to approval. Minor surface imperfections not affecting the strength of casting may be welded in the "green" if approved. Surface imperfections shall be considered minor when the depth of the cavity prepared for welding is the lesser of 20 percent of the actual wall thickness or 1 inch. Defects other than minor surface imperfections may be welded only when specifically authorized in accordance with the following requirements:

- a. The defects have been entirely removed and are judged not to affect the strength, use or machineability of the castings when properly welded and stress relieved.
- b. The proposed welding procedure, stress relief and method of examination of the repair work have been submitted and approved.

#### 2.2.6 Machine Work

Tolerances, allowances and gauges for metal fits between plain, non-threaded, cylindrical parts shall conform to ASME B4.1 for the class of fit shown or required unless otherwise shown on approved detail drawings. Where fits are not shown they shall be suitable as approved. Tolerances for machine-finished surfaces designated by non-decimal dimensions shall be within 1/64 inch. Sufficient machining stock shall be allowed on placing pads to ensure true surfaces of solid material. Finished contact or bearing surfaces shall be true and exact to secure full contact. Journal surfaces shall be polished and all surfaces shall be finished with sufficient smoothness and accuracy to ensure proper operation when assembled. Parts entering any machine shall be accurately machined and all like parts shall be interchangeable except that parts assembled together for drilling or reaming of holes or machining will not be required to be interchangeable with like parts. All drilled holes bolts shall be accurately located.

##### 2.2.6.1 Finished Surfaces

Surface finishes indicated or specified shall be in accordance with ASME B46.1. Values of required roughness heights are arithmetical average deviations expressed in microinches. These values are maximum. Lesser degrees will be satisfactory unless otherwise indicated. Compliance with surface requirements shall be determined by sense of feel and visual

inspection of the work compared to Roughness Comparison Specimens in accordance with the provisions of ASME B46.1. Values of roughness width and waviness height shall be consistent with the general type of finish specified by roughness height. Where the finish is not indicated or specified it shall be that which is most suitable for the particular surface, provide the class of fit required and be indicated on the detail drawings by a symbol which conforms to ASME B46.1 when machine finishing is provided. Flaws such as scratches, ridges, holes, peaks, cracks or checks which will make the part unsuitable for the intended use will be cause for rejection.

#### 2.2.6.2 Unfinished Surfaces

All work shall be laid out to secure proper matching of adjoining unfinished surfaces unless otherwise directed. Where there is a large discrepancy between adjoining unfinished surfaces they shall be chipped and ground smooth or machined to secure proper alignment. Unfinished surfaces shall be true to the lines and dimensions shown and shall be chipped or ground free of all projections and rough spots. Depressions or holes not affecting the strength or usefulness of the parts shall be filled in an approved manner.

#### 2.2.6.3 Shafting

All shafting shall be turned or ground hot-rolled or cold-rolled steel as required unless otherwise specified or authorized. Fillets shall be provided where changes in section occur. Cold-finished shafting may be used where keyseating is the only machine work required.

#### 2.2.7 Miscellaneous Provisions

##### 2.2.7.1 Metallic Coatings

Zinc Coatings - Zinc coatings shall be applied in a manner and of a thickness and quality conforming to ASTM A 123/A 123M. Where zinc coatings are destroyed by cutting, welding or other causes the affected areas shall be regalvanized. Coatings 2 ounces or heavier shall be regalvanized with a suitable low-melting zinc base alloy similar to the recommendations of the American Hot-Dip Galvanizers Association to the thickness and quality specified for the original zinc coating. Coatings less than 2 ounces shall be repaired in accordance with ASTM A 780.

##### 2.2.7.2 Cleaning of Corrosion-Resisting Steel

Oil, paint and other foreign substances shall be removed from corrosion-resisting steel surfaces after fabrication. Cleaning shall be done by vapor degreasing or by the use of cleaners of the alkaline, emulsion or solvent type. After the surfaces have been cleaned they shall be given a final rinsing with clean water followed by a 24 hour period during which the surfaces are intermittently wet with clean water and then allowed to dry for the purpose of inspecting the clean surfaces. The surfaces shall be visually inspected for evidence of paint, oil, grease, welding slag, heat treatment scale, iron rust or other forms of contamination. If evidence of foreign substance exist the surface shall be cleaned in accordance with the applicable provisions of ASTM A 380. The proposed method of treatment shall be furnished for approval. After treatment the surfaces shall be visually reinspected. Brushes used to remove foreign substances shall have only stainless steel or nonmetallic

bristles. Any contamination occurring subsequent to the initial cleaning shall be removed by one or more of the methods indicated above.

#### 2.2.8 Shop Assembly

Each machinery and structural unit furnished] shall be assembled in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Tolerances shall not exceed those shown. Each unit assembled shall be closely checked to ensure that all necessary clearances have been provided and that binding does not occur in any moving part. Assembly in the shop shall be in the same position as final installation in the field unless otherwise specified. Assembly and disassembly work shall be performed in the presence of the Contracting Officer unless waived in writing. Errors or defects disclosed shall be immediately remedied by the Contractor without cost to the Government. Before disassembly for shipment each piece of a machinery or structural unit shall be match-marked to facilitate erection in the field. The location of match-marks shall be indicated by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise directed.

#### 2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

The Contractor shall have required material tests and analyses performed and certified by an approved laboratory to demonstrate that materials are in conformity with the specifications. These tests and analyses shall be performed and certified at the Contractor's expense. Tests, inspections, and verifications shall conform to the requirements of the particular sections of these specifications for the respective items of work unless otherwise specified or authorized. Tests shall be conducted in the presence of the Contracting Officer if so required. The Contractor shall furnish specimens and samples for additional independent tests and analyses upon request by the Contracting Officer. Specimens and samples shall be properly labeled and prepared for shipment.

##### 2.3.1 Nondestructive Testing

When doubt exists as to the soundness of any material part such part may be subjected to any form of nondestructive testing determined by the Contracting Officer. This may include ultrasonic, magnaflux, dye penetrant, x-ray, gamma ray or any other test that will thoroughly investigate the part in question. The cost of such investigation will be borne by the Government. Any defects will be cause for rejection and rejected parts shall be replaced and retested at the Contractor's expense.

##### 2.3.2 Tests of Machinery and Structural Units

The details for tests of machinery and structural units shall conform to the requirements of the particular sections of these specifications covering these items. Each complete machinery and structural unit shall be assembled and tested in the shop in the presence of the Contracting Officer unless otherwise directed. Waiving of tests will not relieve the Contractor of responsibility for any fault in operation, workmanship or material that occurs before the completion of the contract or guarantee. After being installed at the site each complete machinery or structural unit shall be operated through a sufficient number of complete cycles to demonstrate to the satisfaction of the Contracting Officer that it meets the specified operational requirements in all respects.

### 2.3.3 Inspection of Structural Steel Welding

The Contractor shall maintain an approved inspection system and perform required inspections in accordance with Contract Clause CONTRACTOR INSPECTION SYSTEM. Welding shall be subject to inspection to determine conformance with the requirements of AWS D1.1/D1.1M, the approved welding procedures and provisions stated in other sections of these specifications.

Nondestructive examination of designated welds will be required. Supplemental examination of any joint or coupon cut from any location in any joint may be required.

#### 2.3.3.1 Visual Examination

All visual examination of completed welds shall be cleaned and carefully examined for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement and other surface defects to ensure compliance with the requirements of AWS D1.1/D1.1M, Section 3 and Section 9, Part D.

#### 2.3.3.2 Nondestructive Examination

The nondestructive examination of shop and field welds shall be performed as designated or described in the sections of these specifications covering the particular items of work.

- a. Testing Agency - The nondestructive examination of welds and the evaluation of examination tests as to the acceptability of the welds shall be performed by a testing agency adequately equipped and competent to perform such services or by the Contractor using suitable equipment and qualified personnel. In either case written approval of the examination procedures is required and the examination tests shall be made in the presence of the Contracting Officer. The evaluation of examination tests shall be subject to the approval and all records shall become the property of the Government.
- b. Acceptability of Welds - Welds shall be unacceptable if shown to have defects prohibited by AWS D1.1/D1.1M, Subsection 9.25 or possess any degree of incomplete fusion, inadequate penetration or undercutting.

#### 2.3.3.3 Test Coupons

The Government reserves the right to require the Contractor to remove coupons from completed work when doubt as to soundness cannot be resolved by nondestructive examination. Should tests of any two coupons cut from the work of any welder show strengths less than that specified for the base metal it will be considered evidence of negligence or incompetence and such welder shall be removed from the work. When coupons are removed from any part of a structure the members cut shall be repaired in a neat manner with joints of the proper type to develop the full strength of the members. Repaired joints shall be peened as approved or directed to relieve residual stress. The expense for removing and testing coupons, repairing cut members and the nondestructive examination of repairs shall be borne by the Government or the Contractor in accordance with the Contract Clauses INSPECTION AND ACCEPTANCE.

#### 2.3.3.4 Supplemental Examination

When the soundness of any weld is suspected of being deficient due to faulty welding or stresses that might occur during shipment or erection the



Government reserves the right to perform nondestructive supplemental examinations before final acceptance. The cost of such inspection will be borne by the Government.

#### 2.3.4 Structural Steel Welding Repairs

Defective welds in the structural steel welding repairs shall be repaired in accordance with AWS D1.1/D1.1M, Subsection 3.7. Defective weld metal shall be removed to sound metal by use of air carbon-arc or oxygen gouging.

Oxygen gouging shall not be used on ASTM A 514/A 514M steel. The surfaces shall be thoroughly cleaned before welding. Welds that have been repaired shall be retested by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of repairs and retesting shall be borne by the Contractor.

#### 2.3.5 Inspection and Testing of Steel Stud Welding

Fabrication and verification inspection and testing of steel stud welding shall conform to the requirements of AWS D1.1/D1.1M, Subsection 7.8 except as otherwise specified. The Contracting Officer will serve as the verification inspector. One stud in every 100 and studs that do not show a full 360 degree weld flash, have been repaired by welding or whose reduction in length due to welding is less than normal shall be bent or torque tested as required by AWS D1.1/D1.1M, Subsection 7.8. If any of these studs fail two additional studs shall be bent or torque tested. If either of the two additional studs fail all of the studs represented by the tests shall be rejected. Studs that crack under testing in either the weld, base metal or shank shall be rejected and replaced by the Contractor at no additional cost.

#### 2.3.6 Inspection of Steel Castings

The Contractor shall perform radiographic inspection of steel castings as designated and as described in the section of these specifications covering the particular item of work. The procedure for making, evaluating and reporting the radiographic inspection shall conform to the requirements of ASTM E 94.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

All parts to be installed shall be thoroughly cleaned. Packing compounds, rust, dirt, grit and other foreign matter shall be removed. Holes and grooves for lubrication shall be cleaned. Enclosed chambers or passages shall be examined to make sure that they are free from damaging materials. Where units or items are shipped as assemblies they will be inspected prior to installation. Disassembly, cleaning and lubrication will not be required except where necessary to place the assembly in a clean and properly lubricated condition. Pipe wrenches, cold chisels or other tools likely to cause damage to the surfaces of rods, nuts or other parts shall not be used for assembling and tightening parts. Bolts and screws shall be tightened firmly and uniformly but care shall be taken not to overstress the threads. When a half nut is used for locking a full nut the half nut shall be placed first and followed by the full nut. Threads of all bolts except high strength bolts, nuts and screws shall be lubricated with an approved lubricant before assembly. Threads of corrosion-resisting steel bolts and nuts shall be coated with an approved antigalling compound.

Driving and drifting bolts or keys will not be permitted.

### 3.1.1 Alignment and Setting

Each machinery or structural unit shall be accurately aligned by the use of steel shims or other approved methods so that no binding in any moving parts or distortion of any member occurs before it is fastened in place. The alignment of all parts with respect to each other shall be true within the respective tolerances required. Machines shall be set true to the elevations shown.

### 3.1.2 Blocking and Wedges

All blocking and wedges used during installation for the support of parts to be grouted in foundations shall be removed before final grouting unless otherwise directed. Blocking and wedges left in the foundations with approval shall be of steel or iron.

## 3.2 PROTECTION OF FINISHED WORK

### 3.2.1 Machined Surfaces

Machined surfaces shall be thoroughly cleaned of foreign matter. All finished surfaces shall be protected by suitable means. Unassembled pins and bolts shall be oiled and wrapped with moisture resistant paper or protected by other approved means. Finished surfaces of ferrous metals to be in bolted contact shall be washed with an approved rust inhibitor and coated with an approved rust resisting compound for temporary protection during fabrication, shipping and storage periods.

## 3.3 TESTS

### 3.3.1 Workmanship

Workmanship shall be of the highest grade and in accordance with the best modern practices to conform with the specifications for the item of work being furnished.

### 3.3.2 Production Welding

Production welding shall conform to the requirements of AWS D1.1/D1.1M or AWS D1.2as applicable. Studs on which pre-production testing is to be performed shall be welded in the same general position as required on production items (flat, vertical, overhead or sloping). Test and production stud welding will be subjected to visual examination or inspection. If the reduction of the length of studs becomes less than normal as they are welded, welding shall be stopped immediately and not resumed until the cause has been corrected.

-- End of Section --

## SECTION 05120

## STRUCTURAL STEEL

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 316	(1989) ASD Manual of Steel Construction
AISC 317	(1992) ASD Manual of Steel Construction, Vol II: Connections
AISC 325	(2001) LRFD Manual of Steel Construction
AISC 326	(2002) Detailing for Steel Construction
AISC 348	(2000) Structural Joints Using ASTM A325 or A490 Bolts
AISC 350	(1999) Load and Resistance Factor Design (LRFD) Specification for Structural Steel Buildings
AISC FCD	(1995a) AISC Quality Certification Program
AISC M018L	(1999) LRFD Manual of Steel Construction, Metric Conversion Volume I
AISC M019L	(1999) LRFD Manual of Steel Construction, Metric Conversion Volume II

## AMERICAN WELDING SOCIETY (AWS)

AWS A2.4	(1998) Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.1/D1.1M	(2002) Structural Welding Code - Steel

## ASME INTERNATIONAL (ASME)

ASME B46.1	(1995) Surface Texture, (Surface Roughness, Waviness and Lay)
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## ASTM INTERNATIONAL (ASTM)

ASTM A 108	(1999) Steel Bars, Carbon, Cold-Finished, Standard Quality
ASTM A 123/A 123M	(2002) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 143	(2003) Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
ASTM A 242/A 242M	(2003a) High-Strength Low-Alloy Structural Steel
ASTM A 307	Carbon Steel Externally Threaded Standard Fasteners
ASTM A 325	(2002) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 325M	(2003) Structural Bolts, Steel, Heat Treated, 830Mpa Minimum Tensile Strength (Metric)
ASTM A 36/A 36M	(2003a) Carbon Structural Steel
ASTM A 490	(2002) Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
ASTM A 514/A 514M	(2000a) High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
ASTM A 563	(2000) Carbon and Alloy Steel Nuts
ASTM A 572/A 572M	(2003a) High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A 588/A 588M	(2003) High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick
ASTM A 6/A 6M	(2003a) General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A 668/A 668M	(2003) Steel Forgings, Carbon and Alloy, for General Industrial Use
ASTM A 780	(2001) Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings
ASTM A 852/A 852M	(2003) Quenched and Tempered Low-Alloy Structural Steel Plate with 70 ksi (485 MPa) Minimum Yield Strength to 4 in. (100 mm) Thick
ASTM B 695	(2000) Coatings of Zinc Mechanically Deposited on Iron and Steel
ASTM F 436	(2003) Hardened Steel Washers

## THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC PA 1

(2000) Shop, Field, and Maintenance  
Painting

## 1.2 SYSTEM DESCRIPTION

Provide the structural steel system, including [shop primer] [galvanizing], complete and ready for use. Structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing shall be provided in accordance with AISC 316 and AISC 317 except as modified in this contract.

## 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-02 Shop Drawings

Erection Plan, including description of temporary supports; G

Fabrication drawings including description of connections; G

## SD-03 Product Data

Shop primer

Load indicator washers

Load indicator bolts

Include test report for Class B primer.

## SD-06 Test Reports

Class B coating

Bolts, nuts, and washers

Supply the certified manufacturer's mill reports which clearly show the applicable ASTM mechanical and chemical requirements together with the actual test results for the supplied fasteners.

## SD-07 Certificates

Steel

Bolts, nuts, and washers

Shop primer

Welding electrodes and rods

Galvanizing]

AISC Quality Certification]

## Welding procedures and qualifications

### 1.4 AISC QUALITY CERTIFICATION

Work shall be fabricated in an AISC certified fabrication plant.

### 1.5 QUALITY ASSURANCE

#### 1.5.1 Drawing Requirements

Submit fabrication drawings for approval prior to fabrication. Prepare in accordance with AISC 326, AISC 316 and AISC 317. Drawings shall not be reproductions of contract drawings. Include complete information for the fabrication and erection of the structure's components, including the location, type, and size of bolts, welds, member sizes and lengths, connection details, blocks, copes, and cuts. Use AWS A2.4 standard welding symbols. Shoring and temporary bracing shall be designed and sealed by a registered professional engineer and submitted for record purposes as part of the drawings.

#### 1.5.2 Certifications

##### 1.5.2.1 Erection Plan

Submit for record purposes. Indicate the sequence of erection, temporary shoring and bracing, and a detailed sequence of welding, including each welding procedure required.

##### 1.5.2.2 Welding Procedures and Qualifications

Prior to welding, submit certification for each welder stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests. If the qualification date of the welding operator is more than one-year old, the welding operator's qualification certificate shall be accompanied by a current certificate by the welder attesting to the fact that he has been engaged in welding since the date of certification, with no break in welding service greater than 6 months.

## PART 2 PRODUCTS

### 2.1 STEEL

#### 2.1.1 Structural Steel

ASTM A 36/A 36M.

#### 2.1.2 High-Strength Structural Steel

##### 2.1.2.1 Low-Alloy Steel

ASTM A 572/A 572M

##### 2.1.2.2 Quenched and Tempered Alloy Steel

ASTM A 514/A 514M

## 2.1.2.3 Quenched and Tempered Low-Alloy Steel

ASTM A 852/A 852M, 70 ksi.

## 2.1.3 Weathering Structural Steel

ASTM A 242/A 242M, Type 1; ASTM A 588/A 588M.

## 2.2 BOLTS, NUTS, AND WASHERS

Provide the following unless indicated otherwise.

## 2.2.1 Structural Steel

## 2.2.1.1 Bolts

ASTM A 325, Type 1. The bolt heads and the nuts of the supplied fasteners must be marked with the manufacturer's identification mark, the strength grade and type specified by ASTM specifications.

## 2.2.1.2 Nuts

ASTM A 563, Grade and Style for applicable ASTM bolt standard recommended.

## 2.2.1.3 Washers

ASTM F 436 washers for ASTM A 325 bolts.

## 2.2.2 High-Strength Structural Steel

## 2.2.2.1 Bolts

ASTM A 325, Type 1 ASTM A 490, Type 1 or 2.

## 2.2.2.2 Nuts

ASTM A 563, Grade and Style as specified in the applicable ASTM bolt standard.

## 2.2.2.3 Washers

ASTM F 436, plain carbon steel.

## 2.2.3 Weathering Structural Steel

## 2.2.3.1 Bolts

ASTM A 325, Type 3; ASTM A 490, Type 3.

## 2.2.3.2 Nuts

ASTM A 563, heavy hex style, Grade DH3, except Grade C3 may be furnished for ASTM A 325 bolts.

## 2.2.3.3 Washers

ASTM F 436, weathering steel.

#### 2.2.4 Load Indicator Washers

Provide ASTM B 695, Class 50, Type 1 galvanizing.

#### 2.2.5 Load Indicator Bolts

ASTM A 325, Type 1; ASTM A 490, Type 1, with a manufactured notch between the bolt tip and threads. The bolt shall be designed to react to the opposing rotational torques applied by the installation wrench, with the bolt tip automatically shearing off when the proper tension is obtained.

### 2.3 STRUCTURAL STEEL ACCESSORIES

#### 2.3.1 Welding Electrodes and Rods

AWS D1.1/D1.1M.

#### 2.3.2 Welded Shear Stud Connectors

AWS D1.1/D1.1M.

### 2.4 SHOP PRIMER

SSPC Paint 25, (alkyd primer) or SSPC PS 13.01 epoxy-polyamide, green primer (Form 150) type 1, except provide a Class B coating in accordance with AISC 316 and AISC 317 for slip critical joints. Primer shall conform to Federal, State, and local VOC regulations. If flash rusting occurs, re-clean the surface prior to application of primer.

### 2.5 GALVANIZING

ASTM A 123/A 123M or ASTM A 153/A 153M, as applicable, unless specified otherwise galvanize after fabrication where practicable.

### 2.6 FABRICATION

#### 2.6.1 Markings

Prior to erection, members shall be identified by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections shall be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate match markings in areas that will decrease member strength or cause stress concentrations. Affix embossed tags to hot-dipped galvanized members.

#### 2.6.2 Shop Primer

Shop prime structural steel, except as modified herein, in accordance with SSPC PA 1. Do not prime steel surfaces embedded in concrete, galvanized surfaces or surfaces within 0.5 inch of the toe of the welds prior to welding (except surfaces on which metal decking is to be welded). Slip critical surfaces shall be primed with a Class B coating. Prior to assembly, prime surfaces which will be concealed or inaccessible after assembly. Do not apply primer in foggy or rainy weather; when the ambient temperature is below 45 degrees F or over 95 degrees F; or when the primer may be exposed to temperatures below 40 degrees F within 48 hours after application, unless approved otherwise by the Contracting Officer.



#### 2.6.2.1 Primer

Apply primer to a minimum dry film thickness of 2.0 mil except provide the Class B coating for slip critical joints in accordance with the coating manufacturer's recommendations. Repair damaged primed surfaces with an additional coat of primer.

### PART 3 EXECUTION

#### 3.1 FABRICATION

Fabrication shall be in accordance with the applicable provisions of AISC 316. Fabrication and assembly shall be done in the shop to the greatest extent possible. The fabricating plant shall be certified under the AISC FCD for structural steelwork. Compression joints depending on contact bearing shall have a surface roughness not in excess of 500 micro inches as determined by ASME B46.1, and ends shall be square within the tolerances for milled ends specified in ASTM A 6/A 6M. Structural steelwork, except surfaces of steel to be encased in concrete, surfaces to be field welded, surfaces to be fireproofed, and contact surfaces of friction-type high-strength bolted connections shall be prepared for painting in accordance with [endorsement "P" of AISC FCD and primed with the specified paint.

#### 3.2 ERECTION

Erection of structural steel, except as indicated in item b. below, shall be in accordance with the applicable provisions of AISC 316. Erection plan shall be reviewed, stamped and sealed by a licensed structural engineer.

##### 3.2.1 STORAGE

Material shall be stored out of contact with the ground in such manner and location as will minimize corrosion and deterioration. The Contractor shall repair or replace damaged materials or structures as directed by the Contracting Officer.

#### 3.3 CONNECTIONS

Except as modified in this section, connections not detailed shall be designed in accordance with AISC 350. Build connections into existing work. Do not tighten anchor bolts set in concrete with impact torque wrenches. Punch, subpunch and ream, or drill bolt holes. Bolts, nuts, and washers shall be clean of dirt and rust, and lubricated immediately prior to installation. Anchor bolts for structural steel shall be as shown on the contract drawings or directed by the Contracting Officer.

##### 3.3.1 Common Grade Bolts

ASTM A 307 bolts shall be tightened to a "snug tight" fit. "Snug tight" is the tightness that exists when plies in a joint are in firm contact. If firm contact of joint plies cannot be obtained with a few impacts of an impact wrench, or the full effort of a man using a spud wrench, contact the Contracting Officer for further instructions.

##### 3.3.2 High-Strength Bolts

ASTM A 325 and ASTM A 490 bolts shall be fully tensioned to 70 percent of

their minimum tensile strength. [Provide load indicator bolts or washers in all ASTM A 325M or ASTM A 490 bolted connections, except provide only load indicator washers for slip critical connections. Direct tension indicator tightening shall be the only acceptable tightening methods. Use only direct tension indicator tightening for slip critical connections.] Bolts shall be installed in connection holes and initially brought to a snug tight fit. After the initial tightening procedure, bolts shall then be fully tensioned, progressing from the most rigid part of a connection to the free edges.

### 3.4 WELDING

Provide AWS D1.1/D1.1M qualified welders, welding operators, and tackers.

The contractor shall develop and submit the Welding Procedure Specifications (WPS) for all welding, including welding done using prequalified procedures. Prequalified procedures may be submitted for information only; however, procedures that are not prequalified shall be submitted for approval.

### 3.5 SHOP PRIMER REPAIR

Repair shop primer in accordance with the paint manufacturer's recommendation for surfaces damaged by handling, transporting, cutting, welding, or bolting.

#### 3.5.1 Field Priming

Field priming of steel exposed to the weather, or located in building areas without HVAC for control of relative humidity. After erection, the field bolt heads and nuts, field welds, and any abrasions in the shop coat shall be cleaned and primed with paint of the same quality as that used for the shop coat.

### 3.6 FIELD QUALITY CONTROL

Perform field tests, and provide labor, equipment, and incidentals required for testing. The Contracting Officer shall be notified in writing of defective welds, bolts, nuts, and washers within 7 working days of the date of weld inspection.

#### 3.6.1 Welds

##### 3.6.1.1 Visual Inspection

AWS D1.1/D1.1M. Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing and verification inspections. Welding inspectors shall visually inspect and mark welds, including fillet weld end returns.

##### 3.6.1.2 Nondestructive Testing

AWS D1.1/D1.1M. Test locations shall be selected by the Contracting Officer. If more than 20 percent of welds made by a welder contain defects identified by testing, then all welds made by that welder shall be tested by radiographic or ultrasonic testing, as approved by the Contracting Officer. When all welds made by an individual welder are required to be tested, magnetic particle testing shall be used only in areas inaccessible to either radiographic or ultrasonic testing. Retest defective areas after repair.

### 3.6.2 High-Strength Bolts

#### 3.6.2.1 Testing Bolt, Nut, and Washer Assemblies

Test a minimum of 3 bolt, nut, and washer assemblies from each mill certificate batch in a tension measuring device at the job site prior to the beginning of bolting start-up. Demonstrate that the bolts and nuts, when used together, can develop tension not less than the provisions specified in AISC 348, Table 4, depending on bolt size and grade. The bolt tension shall be developed by tightening the nut. A representative of the manufacturer or supplier shall be present to ensure that the fasteners are properly used, and to demonstrate that the fastener assemblies supplied satisfy the specified requirements.

#### 3.6.2.2 Inspection

Inspection procedures shall be in accordance with AISC 348, Section 9. Confirm and report to the Contracting Officer that the materials meet the project specification and that they are properly stored. Confirm that the faying surfaces have been properly prepared before the connections are assembled. Observe the specified job site testing and calibration, and confirm that the procedure to be used provides the required tension. Monitor the work to ensure the testing procedures are routinely followed on joints that are specified to be fully tensioned.

#### 3.6.2.3 Testing

The Government has the option to perform nondestructive tests on 5 percent of the installed bolts to verify compliance with pre-load bolt tension requirements. The nondestructive testing will be done in-place using an ultrasonic measuring device or any other device capable of determining in-place pre-load bolt tension. The test locations shall be selected by the Contracting Officer. If more than 10 percent of the bolts tested contain defects identified by testing, then all bolts used from the batch from which the tested bolts were taken, shall be tested. Retest new bolts after installation.

-- End of Section --

## SECTION 05500A

## MISCELLANEOUS METAL

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A14.3 (2002) Standard for Fixed Ladders and Safety Requirements

## AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7 (2002) Minimum Design Loads for Buildings and Other Structures

## AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M (2002) Structural Welding Code - Steel

## ASTM INTERNATIONAL (ASTM)

ASTM A 123/A 123M (2002) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 283/A 283M (2003) Low and Intermediate Tensile Strength Carbon Steel Plates

ASTM A 36/A 36M (2003a) Carbon Structural Steel

ASTM A 53/A 53M (2002) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM A 653/A 653M (2003) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM A 924/A 924M (1999) General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

ASTM F 1267 (2001) Metal, Expanded, Steel

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10 (2002) Portable Fire Extinguishers

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation;

submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Miscellaneous Metal Items.

Detail drawings indicating material thickness, type, grade, and class; dimensions; and construction details. Drawings shall include catalog cuts, erection details, manufacturer's descriptive data and installation instructions, and templates.

SD-04 Samples

Miscellaneous Metal Items.

Samples shall be full size, taken from manufacturer's stock, and shall be complete as required for installation in the structure. Samples may be installed in the work, provided each sample is clearly identified and its location recorded.

1.3 GENERAL REQUIREMENTS

The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1/D1.1M. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123/A 123M, ASTM A 653/A 653M, or ASTM A 924/A 924M, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

1.4 DISSIMILAR MATERIALS

Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure-treated wood, or absorptive materials subject to wetting, the surfaces shall be protected with a coat of bituminous paint or asphalt varnish.

1.5 WORKMANSHIP

Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's

installation instructions and approved drawings, cuts, and details.

#### 1.6 ANCHORAGE

Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated shall include slotted inserts made to engage with the anchors, expansion shields, and power-driven fasteners when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; and lag bolts and screws for wood.

#### 1.7 SHOP PAINTING

Surfaces of ferrous metal except galvanized surfaces, shall be cleaned and shop coated with the manufacturer's standard protective coating unless otherwise specified. Surfaces of items to be embedded in concrete shall not be painted. Items to be finish painted shall be prepared according to manufacturer's recommendations or as specified.

### PART 2 PRODUCTS

#### 2.1 MISCELLANEOUS

Miscellaneous plates and shapes for items that do not form a part of the structural steel framework, such as but not limited to, lintels, sill angles, miscellaneous mountings, and frames, shall be provided to complete the work.

### PART 3 EXECUTION

#### 3.1 GENERAL INSTALLATION REQUIREMENTS

All items shall be installed at the locations shown and according to the manufacturer's recommendations. Items listed below require additional procedures as specified.

-- End of Section --